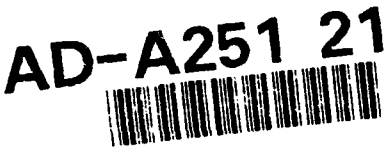
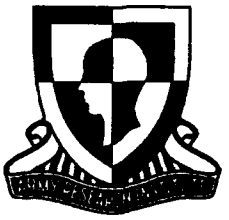
ARI Research Note 92-34

Operation Desert Shield/Storm After Action Report



Plans, Programs, and Operations Office
James A. Bynum, Chief

April 1992



United States Army
Research Institute for the Behavioral and Social Sciences

U.S. ARMY RESEARCH INSTITUTE
FOR THE BEHAVIORAL AND SOCIAL SCIENCES

A Field Operating Agency Under the Jurisdiction of the Deputy Chief of Staff for Personnel

EDGAR M. JOHNSON
Technical Director

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COL, AR
Commanding

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REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1. AGENCY USE ONLY *(Leave blank)*	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED
	1992, May	Final Report Aug 1990 - Mar 1991

4. TITLE AND SUBTITLE
Operation Desert Shield/Storm
After Action Report

5. FUNDING NUMBERS
n/a

6. AUTHOR(S)
Plans, Programs, and Operations Office

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)
U.S. Army Research Institute for the
Behavioral and Social Sciences
5001 Eisenhower Avenue
Alexandria, VA 22333-5600

8. PERFORMING ORGANIZATION REPORT NUMBER
ARI Research Note 92-34

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)
see 7.

10. SPONSORING/MONITORING AGENCY REPORT NUMBER
n/a

11. SUPPLEMENTARY NOTES
- -

12a. DISTRIBUTION/AVAILABILITY STATEMENT
Approved for public release;
distribution is unlimited.

12b. DISTRIBUTION CODE
- -

13. ABSTRACT *(Maximum 200 words)*

This research note chronicles ARI's response to the challenges of Operation Desert Shield/Storm, and reports on the programs brought forward to assist our own and allied soldiers during the emergency.

14. SUBJECT TERMS
Operation Desert Shield
Operation Desert Storm
Army Research Institute (ARI)
Combat Support
Combat
Warfare
Weapons
(over)

15. NUMBER OF PAGES
153

16. PRICE CODE
- -

17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
Unclassified	Unclassified	Unclassified	Unlimited

14. Subject Terms (continued)

Human factors research	Retention
Technology base	Families
Enlistment	Vision
Linguists	

Operation Desert Shield/Storm After Action Report

OPERATION DESERT SHIELD/STORM
AFTER ACTION REPORT

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Workin Paper: Naomi B. Verdugo, ARI and LTC Kenneth A. Martell, Office of the Assistant Secretary of Defense: "Enlistment Plans Under Threat of War: The Impact of Desert Shield/Storm", paper prepared for presentation at the Annual Meeting of the Annual Meeting of the American Psychological Association, 19 August 1991, San Francisco, CA.

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Operation Desert Shield/Storm
After Action Report

Introduction

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INTRODUCTION

Mobilizing the Technology Base A number of recent documents such as the AUSA Special Report: The US Army in Operation Desert Storm -- An Overview have chronicled the events which led to President Bush's decision to pledge the United States Armed Forces to halt Iraqi aggression in Southwest Asia. These documents have portrayed the Army's response in terms of military actions, highlighting mobilization, deployment, unit and weapons performance, and redeployment.

Faced with the prospect of protracted ground combat with what was believed at the outset to be an enemy force with superior numbers and both the capability and will to use chemical and biological agents, the Army marshalled its Technology Base assets to accelerate technology as a possible force equalizer.

In addition, this mobilization of United Nations Forces -- Operation Desert Shield -- was the United States' largest mobilization effort since World War II. It required the mobilization and deployment of both active and reserve component personnel. This presented the Army and the Army Office of the Deputy Chief of Staff (OCDSPER) with the formidable challenge of supporting the mobilization and seizing the opportunity to initiate human factors research to support operational and personnel policy associated with mobilization and deployment. This report documents ARI's response to ODCSPER initiatives, and to the Technology Base call for accelerated technology development and technical advice to the Army in support of these operations.

ODCSPER Initiatives LTG Reno, the DCSPER, placed BG Jones, Deputy Director of Military Personnel Management, in charge of coordinating and directing human affairs research in Operation Desert Shield (see Tab One.) BG Jones identified several topical areas for research and studies that would support operational and personnel policy for the theater. These topics included: small unit leadership; women in the Army, family support; equipment issues; chemical threat effects on individual and unit performance; stress; morale, welfare, and recreation (MWR); the training and operations regimen in Saudi Arabia; and ethnography issues. Representatives from the Army Chief of Chaplains Office, CFSC, WRAIR, and ARI met as a task force to develop the research proposals and detailed plans for research and studies in the topical areas. ARI had a lead role in the topics: women in the Army; equipment issues; and training and operations in Saudi Arabia. The Army Community and Family Support Center (CFSC) had the lead in the topical areas of family support and MWR. The remainder (the bulk) of the efforts were assigned to the Walter Reed Army Institute for Research (WRAIR.)

OSA (RDA) Initiatives While ARI participated in early task force proposal development and planning, two actions caused ARI to shift its emphasis and response from the ODCSPER initiatives. First, Theater Command placed limitations on the influx of non-essential personnel into Saudi Arabia, and as a consequence, ARI was prevented from collecting data on Women in the Army issues. Therefore, Women in the Army was dropped as a research effort. Second, almost simultaneously the Office of the Deputy Chief of Staff for Operations and Plans (ODCSOPS) tasked its divisions and the special programs division of the Office of the Assistant

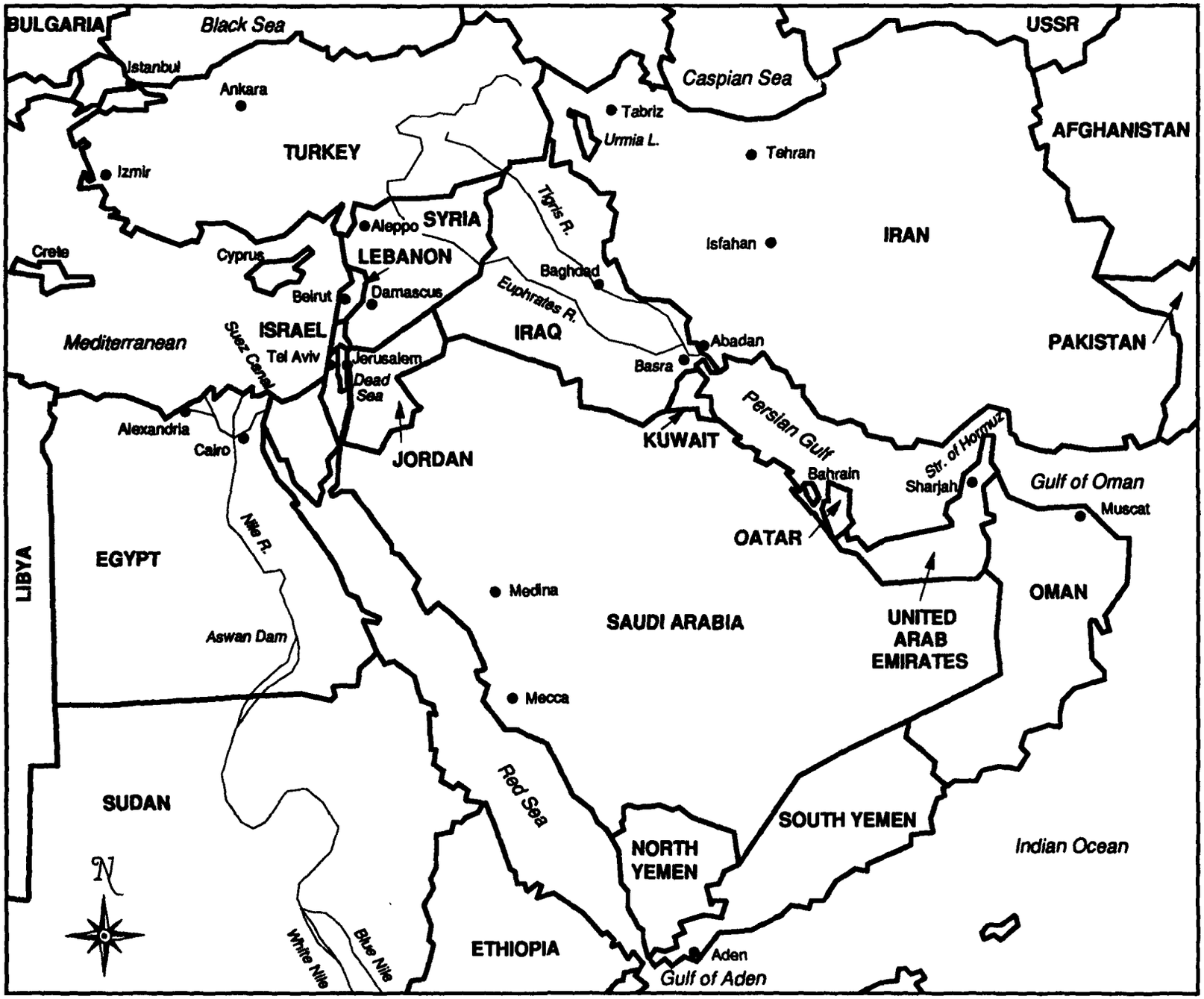
Secretary of the Army (Research, Development, and Acquisition) - OASA (RDA) - to identify R&D efforts and products which, if accelerated, would have an impact on Desert Shield. OASA (RDA) extended that tasking to the R&D community at large, and included a request for FY91 unfunded investment requirements (see Tab Two.) A few days later, OASA (RDA) requested additional information that could be provided to the Defense Science Board Task Force in Support of ODS. (see Tab Three.) Therefore, those topical areas of equipment and training, for which ARI was the lead agency in the ODCSPER initiatives, were also applicable to the OASA (RDA) initiatives. ARI responded to these initial OASA (RDA) data calls by offering to accelerate three R&D efforts: Rapid Train-Up for Tank Gunnery, Intelligent Arabic Tutor for Military Intelligence, and Family Policies and Procedures. ARI also provided technical advice and support with: a Combat Leader's Guide, support for "Flying Carpet," night vision goggle training support, the effects of sunlight on night vision, and command and control effectiveness under stress. A briefing packet and information papers (see Tab Four) were prepared which outline ARI's initial efforts.

Operation Desert Shield became Operation Desert Storm -- the 100 hours war. The speed with which the war was conducted, and the lack of casualties, contributed to a national euphoria but served to shift ARI's support requirements. Where ARI was committed to acceleration of efforts, the war was over before the efforts could come to fruition. Moreover, a requirement for rapid response surveys and the collection and analysis of "lessons learned" information now became paramount. The advisory services and technical support ARI provided proved to be of immediate use, and was valued highly. The proposed accelerated research efforts are being continued to completion. The post-Operation Desert Storm survey requirements are continuing. Synopses of the research and advisory efforts of ARI laboratories to support these operations are contained at Tabs 8 (SRL), 9 (TRL), and 10 (MPRL.)

A GULF WAR CHRONOLOGY

Aug. 2, 1990	Iraq invades Kuwait. U.N. demands withdrawal.
Aug. 3	U.S. announces it will add naval forces to Gulf.
Aug. 6	Iraq postures to invade Saudi Arabia. Saudi king invites U.S.assistance. U.N. authorizes economic sanctions. Bush orders troops and aircraft to Gulf. Operation Desert Shield commences.
Aug. 8	Iraq declares Kuwait a province. First U.S. Army units arrive in Gulf.
Aug. 1 1	First fast sealift ship departs U.S.
Aug. 16	Defense Secretary Cheney authorizes U.S. Navy to intercept ships going to or from Iraq and Kuwait.
Aug. 17	Baghdad threatens to use Westerners as human shields.
Aug. 1 8	U.N. condemns Iraq for holding hostages.
Aug. 22	President authorizes reserve call-up.
Aug. 25	Army activates first reserve units.
Aug. 27	First sealift ship arrives Saudi Arabia.
Sep. 7	First reserve units deploy to Saudi Arabia.
Sep. 16	U.N. condenms Iraq for violence against embassies.
Sep. 25	U.N. tightens embargo on air traffic.
Nov. 8	Bush orders additional 200,000 troops to the Gulf.
Nov. 29	U.N. approves "all necessary means" to evict Iraqi forces from Kuwait.
Dec. 6	Saddam announces release of all hostages.
Dec. 22	Iraq threatens to use chemical weapons if attacked.
Jan. 12, 1991	U.S. Congress grants Bush authority to go to war.
Jan. 1 5	U.N. deadline for Iraqi withdrawal passes.
Jan. 1 7	U.S. and allied forces launch air attack on Iraq Operation Desert Storm begins.
Jan. 1 8	Iraq fires first SCUD missiles at Israel and Saudi Arabia. Patriot missile scores first kill.
Jan. 1 9	Added Patriot missiles airlifted to Israel. President Bush authorizes cail-up of 220,000 reservists
*Jan. 20	U.S. Forces grow to 472,000. Army calls up 20,000 Individual Ready Reservists. Iraq displays captured airmen on television.
Jan. 2 1	First rescue of downed coalition pilot in Iraq. Baghdad threatens to use allied POWs as human shields.
Jan. 26	Iraqis fly fighter aircraft to Iran. First U.S. combat firing of cruise missile from submarine.
Jan. 29	Iraqi battalions attack Saudi town of Khafji.
Jan. 31	Coalition forces recapture Khafji. Iraq loses more than 500 POWs, 300 KIAs.
Feb. 3	Allied air campaign passes 40,000 sorties.
Feb. 1 3	American attack helicopters make night raids on Iraqi positions.
Feb. 21	Iraqis surrender to Apache helicopter attack.

Feb. 24	Land war begins. U.S., coalition forces launch attacks across 300-mile front. First units met by mass surrenders.
Feb. 25	VII and XVII Corps drive deep into Iraq. SCUD missile kills 28 U. S. troops in Dhahran barracks.
Feb. 26	XVII Corps units attack into Euphrates valley. VII Corps destroys Iraqi armored divisions. Marines surround Kuwait City.
Feb. 27	Allies liberate Kuwait City. U.S. tanks crush Republican Guard. Bush halts offensive at 2400 EST. Iraq agrees to all U.N. resolutions.
Mar. 2	Iraqi armored colunm engaged by 24th Infantry, lose 187 armored, 400 wheeled vehicles.
Mar. 3	Allied, Iraqi military agree on cease-fire details, release of POWs. Shi'ites in Basra revolt against Saddam
Mar. 4	Iraq releases 10 POWs (6 U.S).
Mar.6	First U.S. combat troops enplane for U.S.A. Remaining 15 U.S. POWs released.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Cyprus
LEBANON
Baghdad
Beirut
Damascus
Euphrates R.
Mediterranean
ISRAEL
IRAQ
Abadan
PAKISTAN
Suez Canal
Tel Aviv
Jerusalem
Basra
Dead Sea
Persian Gulf
Alexandria
Cairo
KUWAIT
Str. of Hormuz
JORDAN
Bahrain
Sharjah
Gulf of Oman
Muscat
LIBYA
EGYPT
Nile R.
OATAR
OMAN
Medina
SAUDI ARABIA
UNITED ARAB EMIRATES
Aswan Dam
Mecca
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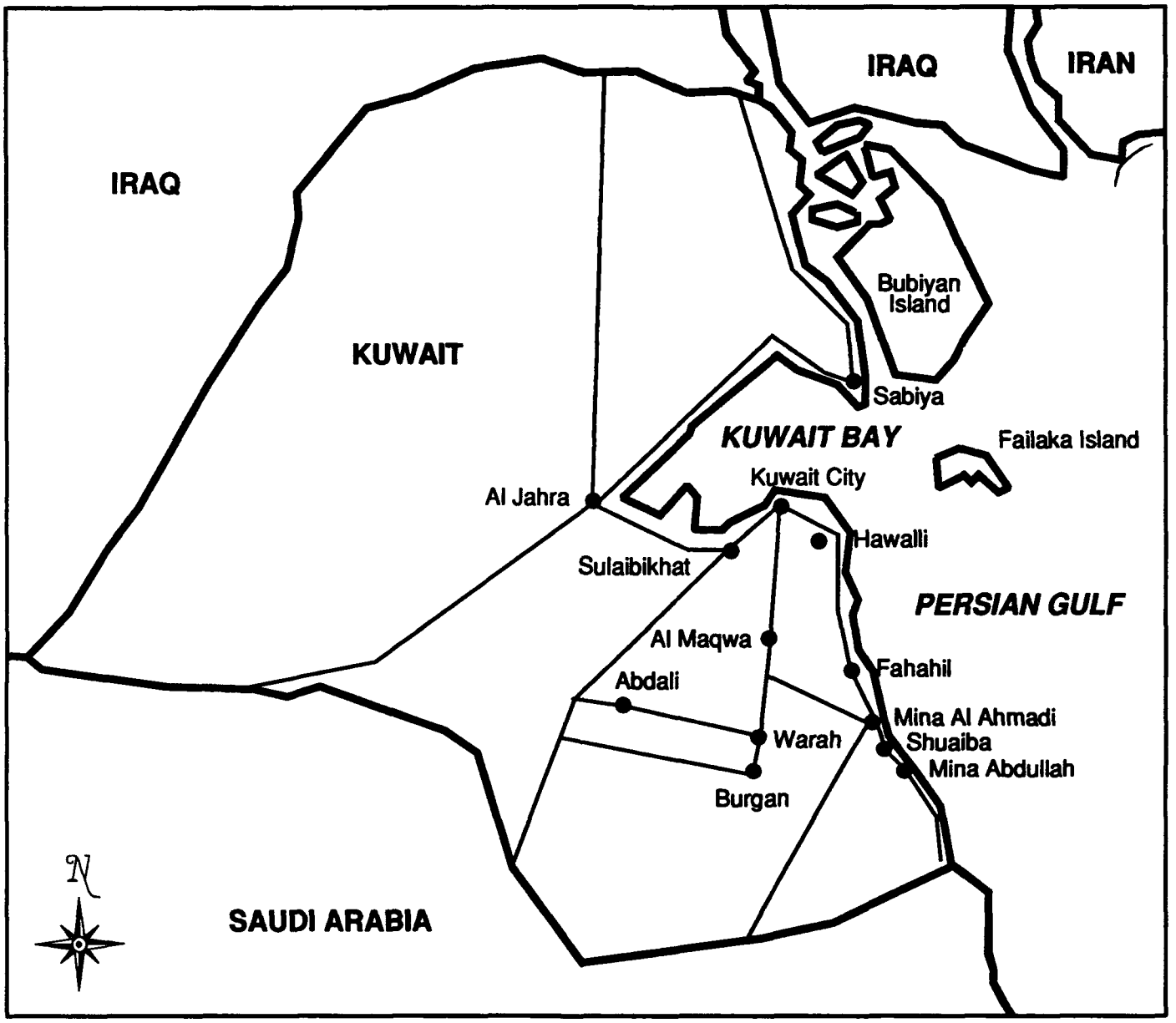
Gulf of Aden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PERSIAN GULF
Al Maqwa
Fahahil
Abdali
Mina Al Ahmadi
Warah
Shuaiba
Mina Abdullah
Burgan
N
SAUDI ARABIA

Operation Desert Shield/Storm
After Action Report

Tab One

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DAPE-MPH-H
SUBJECT: HUMAN FACTORS RESEARCH IN OPERATION DESERT SHIELD

FOR THE DEPUTY CHIEF OF STAFF FOR PERSONNEL:

Encl

T. C. Jones
Brigadier General, GS
Deputy Director of Military
Personnel Management

CF:
CDR, USAMRDC
DIR, WRAIR

(19)

HUMAN FACTORS RESEARCH IN OPERATION DESERT SHIELD

RESEARCH TOPIC	LEAD AGENCY	ASSISTING AGENCY	REMARKS
Sm unit leadership -behaviors of leaders and led -unit cohesion -unit effectiveness	WRAIR	ARI TRC	Should provide insight into effectiveness of current tng for leaders
Affect of cultural isolation on indiv and unit performance As a minimum: -Prac of religion -Sexuality -Alcohol	WRAIR	ARI, CFSC DFCoP	Findings will impact on tour length and rotation policy
Women in the Army -Roles -Expectations -Performance	ARI		Concerned about adequacy/approp of current policies
Family support -Adequacy in AC -Adequacy in RC -Affect on morale -Fidelity and affect on morale	CFSC	WRAIR, ARI, OCCH MFRC	Is there a diff between AC/RC? To what extent is fam support dependent on the sponsor?
Equipment issues -Adequacy of issued clothing/equipment -Soldier confidence in equipment -Ability to use issued	ARI		

RESEARCH TOPIC	LEAD AGENCY	ASSISTING AGENCY	REMARKS
equipment -Affect on morale, performance			
Chemical threat affect on unit, individual performance -Affect as stressor -Affect on morale, motivation -Affect on families -Affect on unit cohesion	WRAIR	SRL ARI, USARIEM	
Differential response of diff units (elite to avg) to total spectrum of envir & psychol conditions	WRAIR	TRL ARI	Try to predict when various units' perf deteriorate. Findings will impact on tour lengths and rotation policy
Stress and impact on unit, indiv performance -Culture -Physical -Emotional --Fear --Family --Battle apprehension	WRAIR	TRL OCCH, ARI, CFSC	Findings will impact on tour lengths and rotation policy
Physical environment and affect on unit, individual performance -Heat -Sand	WRAIR	SRL ARI, USARIEM	Finding will impact on tour length

RESEARCH TOPIC	LEAD AGENCY	ASSISTING AGENCY	REMARKS
-Topography			
MWR needs	CFSC	OCCH, WRAIR	Recreational needs to spt tour length policy.
Training/operations regimen in Saudi Arabia	ARI	WRAIR	
Ethnography issues -Race relations -Cultural	WRAIR		Focus should be interoper-ability in a poss terrorist envir? What behaviors can be expected?

DEPARTMENT OF THE ARMY
OFFICE OF THE DEPUTY CHIEF OF STAFF FOR PERSONNEL
WASHINGTON, DC 20310-0300

REPLY TO ATTENTION OF

DAPE-MPH-H

MEMORANDUM FOR

COMMANDER, US ARMY RESEARCH INSTITUTE FOR THE BEHAVIORAL AND SOCIAL SCIENCES, 5001 EISENHOWER AVE., ALEX VA 22333
COMMANDER, COMMUNITY & FAMILY SUPPORT CENTER, 2461 EISENHOWER AVE., ALEX VA 22331
THE CHIEF OF CHAPLAINS, PENTAGON, WASH DC 20310

SUBJECT: HUMAN FACTORS RESEARCH IN OPERATION DESERT SHIELD

1. The DCSPER feels that Operation Desert Shield provides an excellent opportunity for human factors research. He has placed me in charge of coordinating and directing the Army's research effort in this regard.

2. We have identified several areas for research. Most require coordinated action among your offices. The enclosure identifies the areas which will require your specific lead and those for your collaboration. Several of these topics call for rapid assessment and evaluation in order to develop appropriate operational and personnel policy for the theater. We must proceed on the assumption that Desert Shield operations may terminate as soon as a year from now. Therefore, some deliverables must be ready in as soon as three months from now to be useful in impacting operational and personnel policy.

3. I will need the research proposals with complete detail from each addressee no later than 4 Sep 90. Your research plans should include provision for study of active and reserve component units of all types (combat, combat support, combat service support). After we receive these research plans and cost estimates, additional funding and resources will be determined.

4. I have asked Dr. David Marlowe of WRAIR to prepare a report on the findings of his initial assessment on his return from SWA. His report will include factors and issues to be made part of a commander's guide to the theater. This guide will provide the framework for interaction between the researchers and the commanders.

Operation Desert Shield/Storm
After Action Report

Tab Two

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SUPPORT DESERT SHIELD

"ACCELERATE THE TECH BASE"

BACKGROUND:

Last week DCSOPS tasked it's division and the special programs division of SARDA to identify R&D efforts and products which if accelerated would have impact on Desert Shield. SARD-TR has extended that tasking to the R&D community at large.

In discussions with LTC Larry Clark, XO to SARD-TR the following explanation of the requirement was provided:

o Submissions should directly support Desert Shield and not be fabricated to meet an assumed purpose.

o Items should already be in pipeline and able to be delivered to field; 3 mo; 6 mo; 9 mo; 12 mo.

o The R&D products should provide an added capability not available elsewhere.

o Response needs to pass "reasonableness" test.

o Depending on the "wants" of the Army, this could result in additional resources, now and in the future.

o This is not to be viewed as a "get well" program but as hard R&D products to support Desert Shield.

COMMENT:

Without stretching too far, it seems that this is an excellent opportunity to portray ARI's R&D in the light of the current crisis, and support the Army in the field. We can illustrate the worth and usefulness of SORD research to the Army in a highly visible manner.

TECH BASE SUPPORT OF DESERT SHIELD

Title of the Effort:

Brief Description:

Added Capability:

Basis of Issue for Desert Shield (deficiency):

		FY90	FY91	FY92
Present Program	RDTE			
	PROC			
Accelerated Program	RTDE			
	PROC			

Risks of Acceleration:

Technical (Altering Current Program)

Production (Down Stream Costs)

Expected Outcome:

Remarks:
(include expected delivery time frame (3, 6, 9, 12 mos)

Suggested areas to consider:

- o Training/preparation of reserves (asynchronous teleconferencing)
- o Command/Control, Leadership, Cohesion (NTC)
- o Special selection, assignment methods (Tow/Tank gunner)
- o Personnel Interoperability (Cohesion)
- o QOL/Family Support (Family R&D)
- o Perception/Attitude/Morale questions (MPRL)
- o OPTEMPO Support (NTC)

Attached is a format that will be used by SARDA to illustrate the Tech Base's many contributions as well as its flexibility to meet changing requirements.

It would appear that future defense of Tech Base resources may rely heavily on the Army's belief or perception of the value of Tech Base contributions to Desert Shield.

DRAFT

DEPARTMENT OF THE ARMY
OFFICE OF THE ASSISTANT SECRETARY
WASHINGTON, DC 20310-0103

SARD-ZT

MEMORANDUM FOR COMMANDING GENERAL, U. S. ARMY LABORATORY COMMAND
CHIEF OF RESEARCH AND DEVELOPMENT, CORPS OF ENGINEERS
TECHNICAL DIRECTOR, ARMY RESEARCH INSTITUTE
CHIEF SCIENTIST, STRATEGIC DEFENSE COMMAND
EXECUTIVE ASSISTANT, U. S. ARMY MEDICAL RESEARCH AND DEVELOPMENT COMMAND

SUBJECT: Research and Development Data Exchange Network in Support of Operation Desert Shield (ODS)

A data exchange network has been created to support Operation Desert Shield (ODS). This memorandum outlines the procedures the network will follow in clearing submissions.

As you are aware, this network was brought on-line in response to inquiries concerning R & D support for ODS. An initial list was compiled of 24 programs for possible accelerated transition to limited or full production in support of ODS (enclosure). Addressees are requested to provide information for topics in their area of responsibility by submitting one-page data sheets detailing current funding levels, proposed accelerated funding levels, expected added capabilities and outcomes, and the associated risks involved. All submissions are to pass through the MACOM POCs with each submission approved by the associated General Officer/Senior Executive (GO/SES). These data sheets are to state how soon this acceleration would yield fielded technologies. Of key importance are technologies that can be funded in three, six, nine, and twelve months. This office will use these one-page data sheets as the basis of approval by a General Officer Steering Committee (GOSC) for topics to be forwarded weekly to ODCSOPS for consideration and possible accelerated funding. The sample data sheet enclosed should be followed for the appropriate formatting information.

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As a natural progression, this list will evolve, incorporating ideas from OASA(RDA), the tech base, and from ODS. New items from the tech base must be approved by the appropriate GO/SES. With new submissions, the master list will be updated, time/date stamped with new revision number, and include a summary of the proposed change(s). The list will include status columns for Date Sheet Submission, GO/SES approval, SARD-ZT approval, and Forwarded to ODCSOPS. This new list will be data-faxed to the principle POCs. In this way, this network will work in near real-time. New submissions will be assigned a number to assist the data management. The chronology of each item will be tracked at this office.

It must be stressed that all one-page data sheets be clear, concise, and complete. They must be capable of conveying the necessary information to each decision maker. Only fully successful submissions will be forwarded for funding consideration. All incomplete submissions will be so noted on the master list and the associated MACOM POC notified.

Associated with this effort, and of equal long-term importance, will be the documentation of tech base "success stories." Operation Desert Shield is currently the highest priority mission for the technology base. It is assumed that the tech base is capable of promoting a successful mission in this Middle East crisis. For each program selected for accelerated fielding, the responsible MACOM will generate a short report summarizing the anticipated benefits, including any appropriate photos or diagrams. A follow-up report will be generated chronicling the ultimate contributions this effort has made to ODS. This is an excellent opportunity for the tech base to prove their capabilities and usefulness.

Further guidance and information can be obtained from my POCs for this action, MAJ Larry Lightner and Mr. David Koegel at (202) 695-8434, DSN 225-8434.

George T. Singley III
Deputy Assistant Secretary
For Research and Technology

Enclosures

CF: MG Budge, ODCSPER
MG Granrud, ODCSOPS

(31)

DRAFT

UNCLASSIFIED

#13

Individual Soldier-Operated Personal Acoustic Detector System (ISOPADS)

DESCRIPTION: Hand-held acoustic detection system designed for use by patrol or perimeter defense applications. ISOPADS is highly directive, nonelectronic, passive system which can be tuned over a wide frequency range, with selective filtration of undesired background noise, e.g. normal conversation can be understood at extended distances even in the presence of street noise.

ADDED CAPABILITY: Enhances the soldier's listening ability beyond his own hearing range.

BASIS OF ISSUE FOR DESERT SHIELD: Four units are available in two weeks, then production of 20 units/month.

PRESENT PROGRAM: Current system is non-electronic utilizing a state of the art fluidic laminar proportional amplifier. Research is investigating adding digital processing and a miniaturized electronic package to IPADS to enhance performance and extend range. Research includes incorporation of the technology into the soldier's equipment.

ACCELERATED PROGRAM: Rapid additions of current enhancements including the fabrication of units.

PRESENT FUNDING:

	FY90	FY91	FY92
RDTE	20K	20K	20K
PROC			

ACCELERATED FUNDING:

	FY90	FY91	FY92
RDTE	20K	200K	-
PROC			

* ISOPADS are $4K EA

RISKS OF ACCELERATION: Low risk, many componets are off the shelf items and can be incorporated into the exisiting technology.

EXPECTED OUTCOME: Use of ISOPADS provides for an immediate improvement over existing capabilities, and increases the soldier's ability to detect sounds (voice, vehicles, human noises) at great distances while filtering background noises, e.g. insects, water, etc.

NOTES: ISOPADS is recommended for security defense and extended detection of enemy forces. Use in the desert should be excellent as as result of the natural acoustics.

UNCLASSIFIED

OFFICE, ASSISTANT SECRETARY OF THE ARMY (RDA)

SUMMARY OF ACTION

THRU: XO, MI Dep _____ MI Dep _____ XO, ASA(RDA) _____ TO: ASA(RDA)	ACTION OFFICER: David E. Koegel OFC SYMBOL/PHONE: SARD-ZT/5-8434 DATE: 28AUG90	SUSPENSE DATE 1500 28AUG90 CONTROL NO.	

SUBJECT:
R & D Data Exchange Network in Support of Operation Desert Shield (ODS)

RECOMMENDATION:

That the Deputy Assistant Secretary (R&T) sign the memo next under.

SUMMARY OF ACTION:

A Data Exchange Network has been created to support Operation Desert Shield (ODS). With this network, tech base programs will be considered for accelerated production and fielding based upon input from OASA(RDA), the tech base, and from the field.

The Data Exchange Network and its operation is outlined. Currently, a list of 24 programs has been generated by OASA(RDA), with a data sheet requested by the appropriate MACOM.

The attached memorandum outlines the required information for data submittions and several of the steps involved. In addition, the MACOMS are requested to follow-up successful and accepted programs with reports documenting their contribution to ODC.

IT IS REQUESTED THAT A SUSPENSE OF 1500 TODAY BE ADHERED TO. FAX responses (FORM 5 only, filled out below) to (202) 695-8691. Phone in additional comments to (202) 695-8434.

MILITARY DEPUTY ACTION	ASA(RDA) ACTION
[ ] [Approved] [Recommend Approval] [ ] [Disapproved] [Recommend Disapproval] [ ] PSM [ ] Noted [ ]_____ Comments:	[ ] Approved [ ] Disapproved [ ] PSM [ ] Noted Comments:

COORDINATION

CC	NCC	OFFICE	NAME	PHONE
		AMC		
		COE		
✓		ARI	BYNUM	274-8637
		SDC		
		MRDC		

APPROVALS

	APPR	DISAPP	INITIAL	DATE
BRANCH				
DIV				
EXEC				
DEP				

CC=Concur NCC=Nonconcur APPR=Approved DISAPP=Disapproved

SARD Form 5 (dek)

SINGLE POCs FOR OPERATION DESERT SHIELD DATA SUBMISSIONS

HQDA - OASA(RDA) MAJ Lawrence Lightner 695-8434
FAX 695-8691 (AUTOVON 225)
SECURE FAX (STU-III) 697-4944
VERIFY SECURE FAX 697-8744
Mr. David Koegel (back-up)
Same Phone/FAX as MAJ Lightner

AMC: MG JERRY HARRISON 274-9561 FAX: 274-3123
LTC Dennis Schmidt 394-3014 BEEPER: 801-3722
FAX 394-4720 (LABCOM) (ALT: AMC as above)
SECURE FAX (STU-III) 394-4232
VERIFY SECURE FAX 394-3577

COE: DR. ROBERT OSWALD
Mr. Jerry Lundien 272-1847
(back-up Don Leverenz)
FAX 272-0907
SECURE FAX (STU-III) 272-1049
VERIFY SECURE FAX 272-1415/1847

ARI: DR. EDGAR JOHNSON
Dr. James Bynum 274-8637
FAX 274-5616
SECURE FAX thru DAPE-ZXO

SDC: DR. PETE PAPPAS
LTC John Donnellon 746-0822
FAX 746-0306
SECURE FAX 746-0807
VERIFY SECURE FAX 746-1588

MRDC: COL GEORGE LEWIS
COL Susan McMarlin (301) 663-7137 (AV 343-)
(back-up MAJ Dave Williams)
FAX (301) 663-2982
SECURE FAX (STU-III) (301) 663-7137
VERIFY SECURE FAX (301) 663-7137

DEPARTMENT OF THE ARMY
OFFICE OF THE ASSISTANT SECRETARY
WASHINGTON, DC 20310-0103

SARD-ZT

16 OCT 1990

MEMORANDUM FOR DISTRIBUTION

SUBJECT: Desert Shield FY 91 Unfunded Investment Requirements

REFERENCE: SARD-RI memorandum, dtd 11 OCT 1990, SAB (enclosed)

Request the attached memorandum be reviewed. The classified attachment to the reference (deleted) does not contain items within the purview of the organizations in the distribution. In addition to the current issue paper format, an additional format (example attached) is required by SARD-RI that incorporates additional information. Both papers will be forwarded to the coordinating offices and SARD-RI to provide additional information to individuals who may not be familiar with the proposed project. It is important that the papers state the additional (or new) capabilities the project will give to Operation Desert Shield. Funding information should be complete.

All submissions should be approved by the appropriate SES/GO. For multiple submissions, topics should be prioritized. This is a good opportunity to review and possibly resubmit previous proposals. Responses to this data call will also be inputted into an additional funding channel that has developed.

Request responses be provided to this office by COB 22 OCT 1990. Issue papers will then be coordinated with ODCSOPS and ODCSLOG. If you have information regarding favorable review by ODCSOPS or CINCCENT, phone ahead with this information and/or attach additional documentation to the issue papers. An ODCSOPS/CINCCENT nonconcurrence is a show stopper. The POC for this action is the undersigned and can be reached at (703) 695-8434, DSN 225-8434, STUIII 73090.

DAVID E. KOEGEL
SARD-ZT POC for
Operation Desert Shield

Attachments
Distribution:
COL Susan McMarlin, MRDC
LTC John Donnellon, SDC
MAJ Marc Collins, COE
Dr. James Bynum, ARI

(35)

~~CONFIDENTIAL~~

DEPARTMENT OF THE ARMY
OFFICE OF THE ASSISTANT SECRETARY
WASHINGTON, DC 20310-0103

REPLY TO ATTENTION OF

21 OCT 1990

SARD-RI

MEMORANDUM FOR DISTRIBUTION

SUBJECT: DESERT SHIELD FY 91 Unfunded Investment Requirements

1. The purpose of this memorandum is to request addressee revalidation of current and identification of new RDA FY 91 unfunded requirements in support of DESERT SHIELD. Only RDA funded requirements should be submitted. The current list (attached) does not reflect those items which have been included on the FY 90 Reprogramming request, as no further action on these items by SARDA is necessary at this time.

2. Request addressees provide issue sheets for those items which do not currently have sheets. Offices submitting new requirements should prepare and staff issue sheets so that the requirements can be validated, a priority assigned, and accomplished based on funding availability.

3. RDA funding in support of DESERT SHIELD is likely to remain limited, so every effort must be made to fund within available resources. The current list should be reviewed to determine if any of the listed requirements could be accomplished within currently appropriated programs.

4. Request responses be provided to this office by 1200 hours, 24 Oct. POC this action is MAJ D. Miller, X50331.

CRAIG M. CHILDRESS
COL, GS
Director, Plans and Programs

Distribution:
AMCDE
AMCLD
SARD-ZT
SAIS-PP
SARD-ZCS
SARD-ZCA
SARD-SI
SARD-TM

~~CONFIDENTIAL~~

(36)

UNCLASSIFIED

CF: SARD-RR
SARD-SA
SARD-SM
SARD-SC
SARD-SO
DAMO-FDR
DAMO-FDL

Attachment-as stated.

UNCLASSIFIED

AS OF 141200SEP90

ISSUE: Uncooled Infrared Sensor (UIRS)

INITIATED BY: ODDR&E-BTI

SUMMARY OF ACTION: The uncooled infrared sensors provide a light weight (less than 4 lbs), long wavelength imaging capability independent of light level or obscurants such as smoke. The units can be used for handheld surveillance, physical security, as well as a weapon site. UIRS is a Balanced Technology Initiative (BTI) prototype development program. The deployable units for Desert Shield can be produced, in an accelerated program, in addition to the test units already in development.

FUNDING: ($ in millions)	FY90	FY91
RDT&E Required	$8.0	$6.0
RDT&E Available	0	0
Delta	8.0	6.0

BILLPAYERS: Sources to be identified.

PROGRAM IMPACT IF APPROVED: Within 6 mo, 6-12 units will be fielded, 130 units by 9th, and 250 total units fielded within 12 months. Units are $35K each.

RELATED ISSUES/ACTION: Contractor support is available at $5K/unit/year. Units are capable of operating at 130F, with slight performance degradation (shorter battery life, shorter range performance) at 140F. They use a stock Army battery.

DCSOPS VALIDATION: YES/**NO** NAME: COL Archie Galloway DAMO-FDD
DCSLOG VALIDATION: **YES**/NO NAME: Mr.Donald Demchak DALO-SMC

ALTERNATIVE SOLUTIONS: Cryogenically cooled (77 K) IR sensors are available but ential a much higher logistics burden and their cost prohibits their widespread use.

CONGRESSIONAL/OSD INTEREST: The Uncooled Infrared Sensor prototypes are being developed by the ODDR&E BTI program, which is a Congressional special interest program.

ACTION/AUTHORITY REQUIRED: UIRS development work is funded out of the OSD BTI funding line, PE 0603737D.

POC: Mr. Zimmerman/SARD-TC/78432

EXAMPLE

Operation Desert Shield/Storm
After Action Report

Tab Three

DEPARTMENT OF THE ARMY
OFFICE OF THE ASSISTANT SECRETARY
WASHINGTON, DC 20310-0103

SARD-ZT

30 OCT 1990

MEMORANDUM FOR MG Jerry Harrison, AMC
Dr. Robert Oswald, COE
Dr. Edgar Johnson, ARI/ODCSPER
Dr. Pete Pappas, SDC
COL George Lewis, MRDC

SUBJECT: Information for the Defense Science Board (DSB) Task Force in Support of Operation Desert Shield (ODS)

The Deputy Under Secretary of Defense for Acquisition has convened a DSB task force to review the use of high leverage technology to support ODS (enclosure 1). My office is responsible for providing the Army tech base input to the DSB task force. Request your organization submit information specific to this issue.

Outlines for the information required are attached to aid your organization in selecting the appropriate information (enclosure 2). It is expected that the funding figures will be the most difficult to resolve. However, request you make a concerted effort to provide the best possible figures.

Since the first briefing by the Army to OSD will be on 7 November 1990, request your responses by COB 5 November 1990. Due to both the short suspense for this information as well as the potential for the current situation to change in the Middle East, request you make every effort to keep this information up-to-date after initial submission. My POC for this action and all matters related to ODS is Mr. David E. Koegel who can be reached at (703) 695-8434/8443, DSN 225-8434/8443, STUIII 73090.

Lawrence C. Clark
for George T. Singley III SES, GS Executive
Deputy Assistant Secretary
For Research and Technology

Enclosures

ACQUISITION

THE UNDER SECRETARY OF DEFENSE
WASHINGTON, DC 20301

17 OCT 1990

MEMORANDUM FOR CHAIRMAN, DEFENSE SCIENCE BOARD

SUBJECT: Terms of Reference--Defense Science Board Task Force on High Leverage Technology Support for Operation Desert Shield

You are requested to organize a Defense Science Board Task Force to consider the application of high leverage technology to support potential combat operations in the Persian Gulf and to advise me on the feasibility of providing near-term enhancements to U.S. capabilities.

The High Leverage Technology Task Force should base its deliberations on CINCCENT requirements and should accomplish the following:

a. Review major U.S. and Iraqi combat and combat support requirements and capabilities to identify high payoff areas for technology application.

b. Review on-going actions and recommend additional opportunities to enhance U.S. capabilities through the use of fieldable brassboards or other means of expediting high leverage technology.

c. Suggest procedural and organizational changes that would facilitate the rapid transition of high leverage technology to the field activities.

d. Recommend other possible relevant DSB activities which may result as a follow-on to this task force.

It is requested that your review of the above subject be concluded within four months and an interim report, focusing on items a and b, be issued within six weeks.

The Director of Defense Research and Engineering will sponsor the Task Force. Mr. Bert Fowler will serve as the Chairman. Col N.L. McCall, USMC, DDDRE/TWP, will be the Executive Secretary. LtCol David L. Beadner will be the DSB Secretariat representative.

Donald J. Yockey
Deputy Under Secretary
for Acquisition

FNCL 1

[office symbol]
[date]

TECHNOLOGY IN SUPPORT OF OPERATION DESERT SHIELD

DESCRIPTION: [What is it?]

REQUIREMENT: [What requirement does it meet?]

CHARACTERISTICS COMPARISION: [What characteristics are being improved]

BASIS OF ISSUE: [Who gets what? How many?]

FUNDING: FY ($M)

RDTE	PRIOR YEARS	FY90	FY91	FY92	FY93	REMAINING	TOTAL
6.2							
6.3a							
TOTAL							

WORK PERFORMED BY: [In-house, multi-agency, contractor, academia?]

MILESTONE: [When do we get there?]

PROGRAM HIGHLIGHTS:
FY90:

FY91:

FY92:

CONTRACTOR PROBLEMS: [Technical, managerial, production, labor problems?]

OSD/OMB/OTHER SERVICES ISSUES: [Support or non-support]

CONGRESSIONAL ISSUES:

RATIONALISATION STANDARDISATION INTEROPERABILITY (RSI): [Co-production, usage within alliances?]

RECENT SIGNIFICANT SUCCESSES:
FAILURES:

IMPACT IF FUNDING DENIED:

COORDINATION: **AO:** [name/extension]
CLASSIFICATION: **APPROV. BY:**

ENCL 2 (1of 4) (42)

[office symbol]
[date]

TECHNOLOGY IN SUPPORT OF OPERATION DESERT SHIELD

1. FACTS:

a.

b.

c.

2. ARMY POSITION:

COORDINATION: AO: [name/extension]

CLASSIFIED BY:

ENCL 2 (2 of 4) (43)

[office symbol]
[date]

TECHNOLOGY IN SUPPORT OF OPERATION DESERT SHIELD

TALKING POINTS:

-
-
-

CONGRESSIONAL INTEREST:

BUDGET DATA: ($M)

RDTE	PRIOR YEARS	CURRENT FY91	BUDGET FY92	(ALL TO COMPL) REMAINING	TOTAL
6.2					
6.3a					

COORDINATION: **AO:** [name/extension]

CLASSIFIED BY:

ENCL 2 (3 of 4)

[office symbol]
[date]

TECHNOLOGY IN SUPPORT OF OPERATION DESERT SHIELD

QUESTION:

COPYPOINT:

COPYPOINT EXPLANATION/CLARIFICATION

AO: [name/extension]

FNCI 2(4of4)

Operation Desert Shield/Storm
After Action Report

Tab Four

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ARI SUPPORT FOR DESERT SHIELD

19 DEC 90

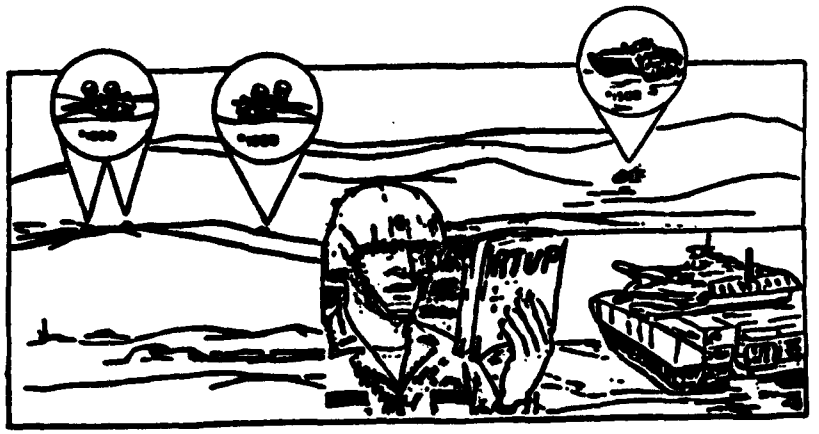
ARI SUPPORT FOR DESERT SHIELD

CONTENTS

- **ACCELERATING THE TECH BASE**
  - RAPID TRAIN-UP PACKAGE FOR TANK GUNNERY
  - INTELLIGENT ARABIC TUTOR FOR MI
  - FAMILY POLICIES AND PROCEDURES
- **TECHNICAL ADVICE AND SUPPORT**
  - COMBAT LEADERS' GUIDE
  - SUPPORT FOR FLYING CARPET
  - NIGHT VISION GOGGLE TRAINING SUPPORT
  - EFFECTS OF SUNLIGHT ON NIGHT VISION
  - COMMAND AND CONTROL EFFECTIVENESS UNDER STRESS

DEC 90

RAPID TRAIN-UP PACKAGE FOR TANK GUNNERY



OBJECTIVE

- INTEGRATE AVAILABLE TRAINING MATERIALS TO PROVIDE PRE-DEPLOYMENT AND DEPLOYMENT TRAINING PACKAGES.
  - MODIFY M60A3 RAPID TRAIN-UP MATERIALS TO SUPPORT M1,M1A1 AND CURRENT DOCTRINE.
  - VALIDATE TRAINING PACKAGES AND PROVIDE TO TRADOC FOR PRINTING AND DISTRIBUTION.

RESOURCES/POC

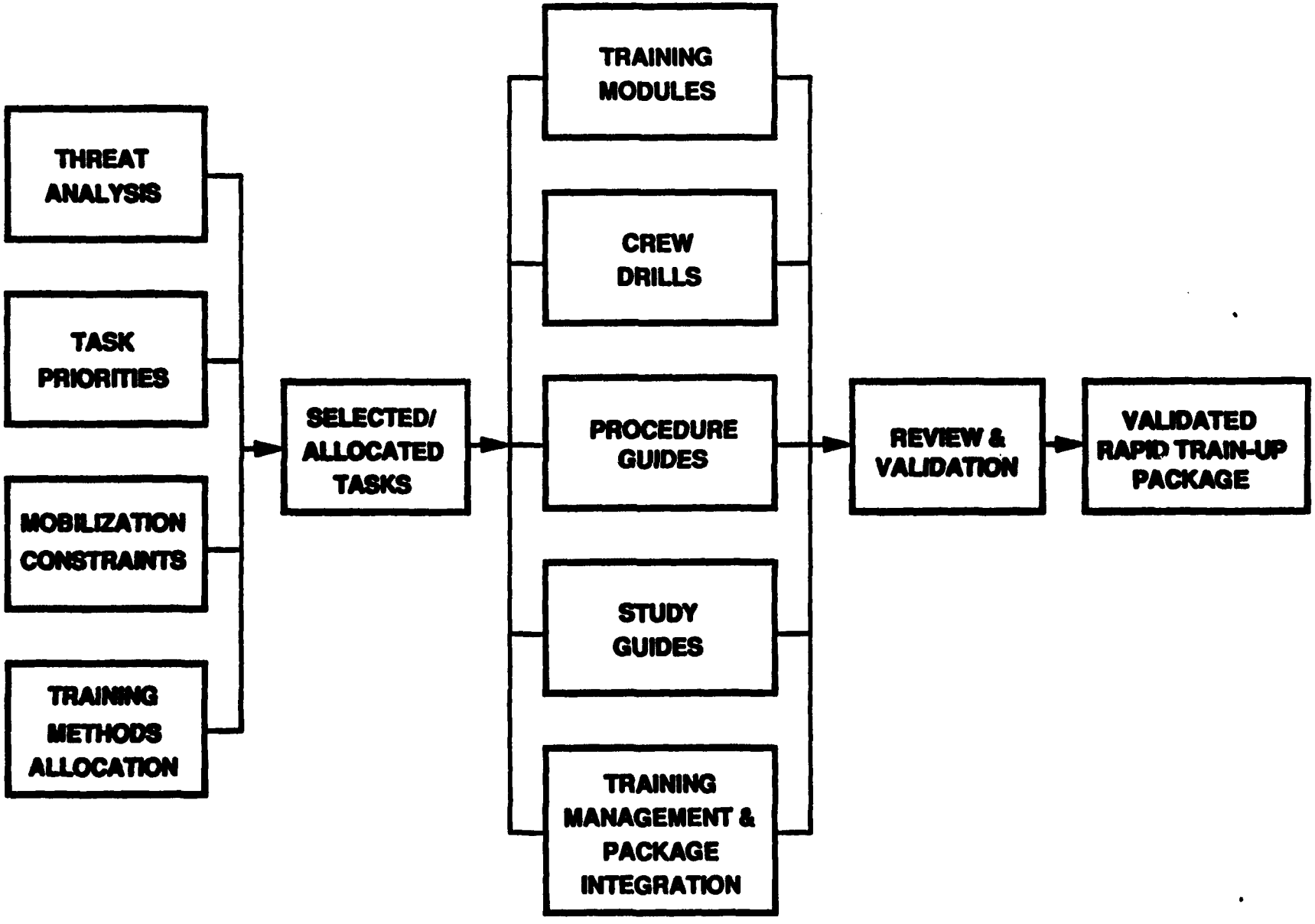
- TOTAL COSTS: $500K
  - IN-HOUSE: 1.5 PSY (FT KNOX & BOISE)
  - CONTRACT: $350K
- POC: DR. HAGGARD, ARI-FT KNOX FIELD UNIT AV 464-3451

MILESTONES

- DESERT SHIELD TASK/THREAT AND TRAINING ALLOCATION STRATEGY ..... NOV 90
- DRAFT PROTOTYPE TRAINING MATERIALS .... FEB 91
- VALIDATED TRAINING MATERIALS ..... APR 91
- VALIDATED PROTOTYPE RAPID TRAIN-UP PACKAGES FOR M1/M1A1 ..... JUN 91

DEC 90

RAPID TRAIN-UP PACKAGE FOR TANK GUNNERY



DEC 90

RAPID TRAIN-UP PACKAGE FOR TANK GUNNERY

- Prototype Rapid Train-Up Package is Portable, Low-Cost Technical Skills Training for Four Armor Crew Positions, including:
  - Self-study booklets on fire commands, degraded mode procedures
  - Procedure Guides (job aids) for crew maintenance
  - Training Modules of crew tasks with training/testing guidelines
- Modular Design for Multiple Active and Reserve Component Training Applications
  - Pre-deployment training at mobilization sites
  - Sustainment training between combat assignments
  - Reconstitution of crews and cross-training of crew positions
- M60A's Prototype Delivered To DCST, TRADOC for Printing and Distribution in 1986

DEC 90

INTELLIGENT ARABIC TUTOR FOR MI

OBJECTIVES *

EMBED AI AND NATURAL LANGUAGE PROCESSING TECHNIQUES INTO TRAINING FOR ARMY INTELLIGENCE LINGUISTS TO:

- DEVELOP MOS-SPECIFIC ARABIC LANGUAGE SKILLS MORE RAPIDLY
- PROVIDE MORE EFFECTIVE, ADVANCED ARABIC INSTRUCTION TO TRANSITION FROM LEVEL 1 TO 2
- PROVIDE PORTABLE, ON-THE-JOB DELIVERY USING 386 PC SYSTEM
- ENHANCE RETENTION OF MI ARABIC SKILLS

FUNDING ($K)

FY 90	FY 91
200	

POC: DR. M. HOLLAND, ARI-AUTOMATED INSTRUCTIONAL SYSTEMS TECHNICAL AREA
AV 284-5569

MILESTONES *

- DESIGN SPECIFICATIONS FOR AI-BASED ARABIC LANGUAGE TUTOR 2QFY91
- PROTOTYPE ARABIC TUTOR WITH SPEECH RECOGNITION AND HYPERTEXT ... 3QFY91
- COMPLETE ARABIC TUTOR FOR MI 4QFY91

* ACCELERATED FROM TASK 3203

DEC 90

INTELLIGENT ARABIC TUTOR FOR MI

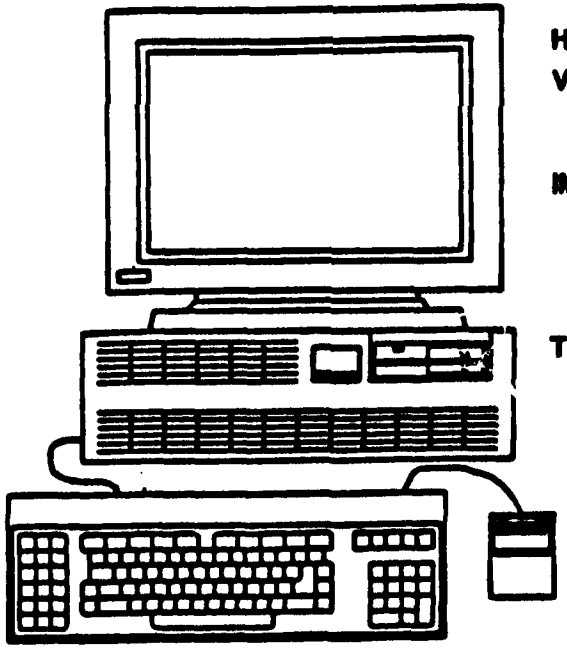
A PORTABLE AUTOMATIC LANGUAGE PARSING AND SPEECH RECOGNITION SYSTEM TO TRAIN LEVEL 1 TO LEVEL 2 AND MAINTAIN ARABIC WITH EXTENSIBILITY TO OTHER LANGUAGES

LESSONS FOCUSING ON MOS 97E ARABIC SKILLS INCLUDING INTERROGATION DIALOGS AND MAP READING

THE FOREIGN LANGUAGE TUTOR WORKSTATION

INPUT MEDIA
- KEYBOARD
- MOUSE
- TOUCHSCREEN

SYSTEM
- 386 PC
- WINDOWS 3.0
- ARITY PROLOG
- GUIDE HYPERMEDIA INFORMATION SYSTEM



HYPERMEDIA OUTPUTS
- VOICE
  - WORD
  - SENTENCE
- IMAGES
  - SCANNED IMAGES (MAPS, PICTURES)
  - GRAPHIC IMAGES (SCENES)
  - VIDEODISK IMAGES (PEOPLE, LOCATIONS, EQUIPMENT, INTERROGATION AIDS)
- TEXT INFORMATION
  - LEXICON
  - GRAMMAR
  - SEMANTICS
  - DISCOURSE
  - PRAGMATICS

DEC 90

FAMILY POLICIES & PROCEDURES

OBJECTIVE*

PROVIDE ARMY POLICY MAKERS AND SERVICE PROVIDERS WITH INFORMATION PERTAINING TO ISSUES AFFECTING FAMILIES WHOSE SOLDIERS (ACTIVE, RESERVE AND NATIONAL GUARD) ARE DEPLOYED DURING OPERATION DESERT SHIELD.

FUNDING ($K)

FY 90	FY 91
10	500

POC: DR. BELL,
ARI-PERSONNEL UTILIZATION TECH AREA
AV 284-8866

MILESTONES*

- FIELD INTERVIEWS WITH FAMILIES & SERVICE PROVIDERS 1Q FY91
- REPORT ON FAMILY ISSUES IN ODS 1Q FY91
- REPORT ON FAMILY ADAPTATION 1Q FY91
- SURVEY OF SPOUSES AND SERVICE 2Q FY91
- REPORT ON FAMILY SERVICES IN AC & RC 3Q FY91

* ACCELERATED FROM TASK 2302

DEC 90

ODS RESEARCH:
FAMILY POLICIES & PROCEDURES

Oct 90 Data Collection as Part of CFSC Task Force

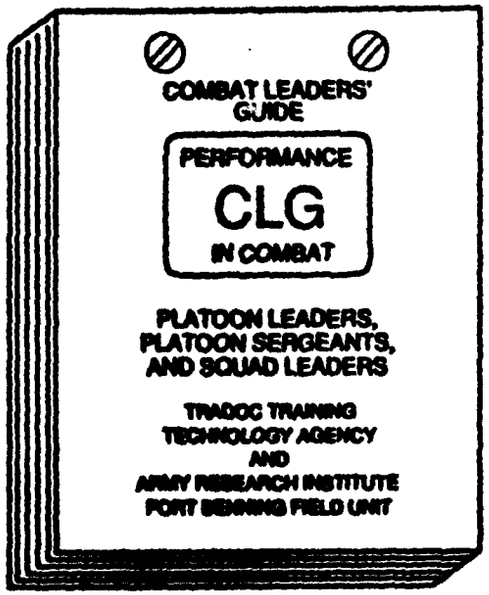
Initial Recommendations to Improve Operation Desert Shield Family Support

- Improved information system is needed for:
  - Spouses unable to attend deployment briefing
  - Parents, former spouses, and "significant others"
  - Proactive rumor control
- Increased community support is required for Army programs (CHAMPUS, Soldier/Sailor Relief Act, Powers of Attorney)
- Improved planning for:
  - Mass casualty scenarios
  - Staff training/utilization
  - Family care plans
  - Support of "newly arrived" families

Task Force recommendations briefed to VCSA & are being staffed/implemented

DEC 90

COMBAT LEADERS' GUIDE



ISSUE

UNITS DEPLOYING TO OPERATION DESERT SHIELD REQUEST JOB PERFORMANCE AIDS

- LEADER PERFORMANCE DETERIORATES DURING CONTINUOUS OPERATIONS AND PERIODS OF HIGH STRESS AND FATIGUE
- COMBAT LEADERS' GUIDE (FOR PLATOON LEADERS, PLATOON SERGEANTS AND SQUAD LEADERS) DEVELOPED IN FY 87 IS A STANDARDIZED, MODULAR, JOB PERFORMANCE AID DESIGNED TO PROVIDE EASY ACCESS TO CRITICAL INFORMATION

EVALUATION

USER QUESTIONNAIRE FEEDBACK AND CONTINUING WORLDWIDE REQUESTS FOR COPIES INDICATE GUIDE SUCCESSFULLY MEETS AN ARMY NEED

RESOURCES/POC

- ORIGINAL FUNDING - TRAINING TECHNOLOGY AGENCY, TRADOC
- POC: MRS. SALTER, ARI-FT BENNING FIELD UNIT AV 835-5589

IMPACT

COMBAT LEADERS' GUIDES REQUESTED IMMEDIATELY PRIOR TO OPERATION DESERT SHIELD DEPLOYMENT BY:

197TH INFANTRY BRIGADE (128 COPIES)
24TH INFANTRY DIVISION (160 COPIES)

COMBAT LEADERS' GUIDES REQUESTED IN ANTICIPATION OF OPERATION DESERT SHIELD DEPLOYMENT BY:

1ST INFANTRY DIVISION (64 COPIES)
155TH INFANTRY (MECH) MISSISSIPPI NATIONAL GUARD (32 COPIES)

DEC 90

SUPPORT FOR FLYING CARPET

OBJECTIVES

- DEVELOP COMMANDER'S GUIDE FOR USING FLYING CARPET TO PLAN/PREPARE FOR BATTLE.
- ASSIST ARMOR SCHOOL IN SYSTEM "SHAKE OUT".
- COLLECT FEEDBACK ON USE OF FLYING CARPET AND COMMANDER'S GUIDE IN SAUDI ARABIA.

RESOURCES/POC

- FLYING CARPET FUNDED BY DARPA
- ARMOR SCHOOL COMMAND AND STAFF DEPT SMEs
- TWO ARI-KNOX PSYCHOLOGISTS FOR 5 MONTHS
- POC: DR. BURNSIDE/DR. BESSEMER, ARI-FT KNOX FIELD UNIT AV 464-2613

MILESTONES

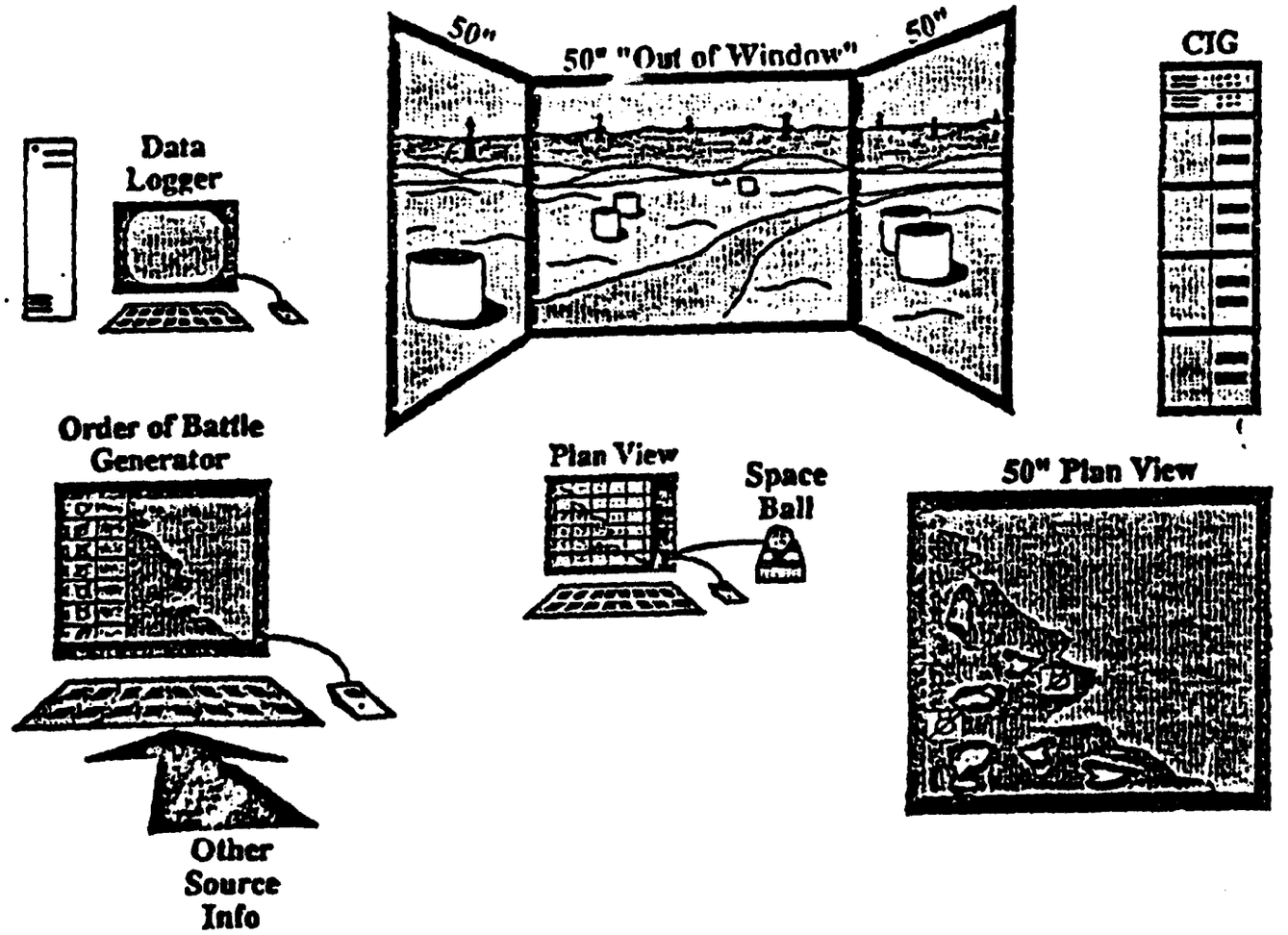
- COMPLETE DRAFT COMMANDER'S GUIDE ..... 7 DEC 90
- ASSIST KNOX SMEs "SHAKE OUT" OF SYSTEM AND GUIDES ..... 10 DEC 90-9 JAN 91
- REVISE GUIDE FOR DEPLOYMENT WITH SYSTEM ..... 31 JAN 91
- COLLECT FEEDBACK ON USE OF SYSTEM AND GUIDE ..... FEB 91

DEC 90

"FLYING CARPET"

2-D/3-D VIEW OF

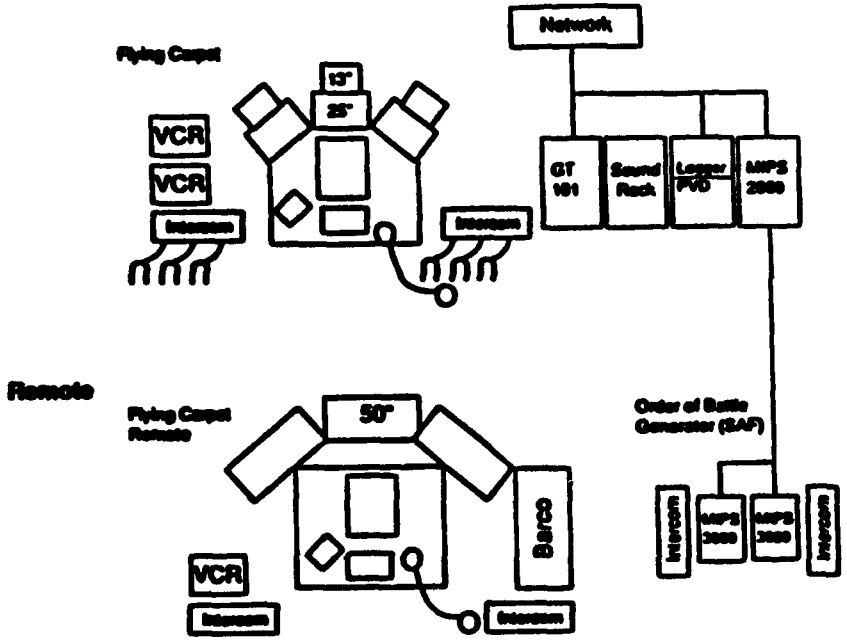
- TERRAIN
- ORDER OF BATTLE
- HISTORY



DEC 90

SUPPORT FOR FLYING CARPET

EQUIPMENT IN 20' CONTAINER ON VAN



COMPONENTS

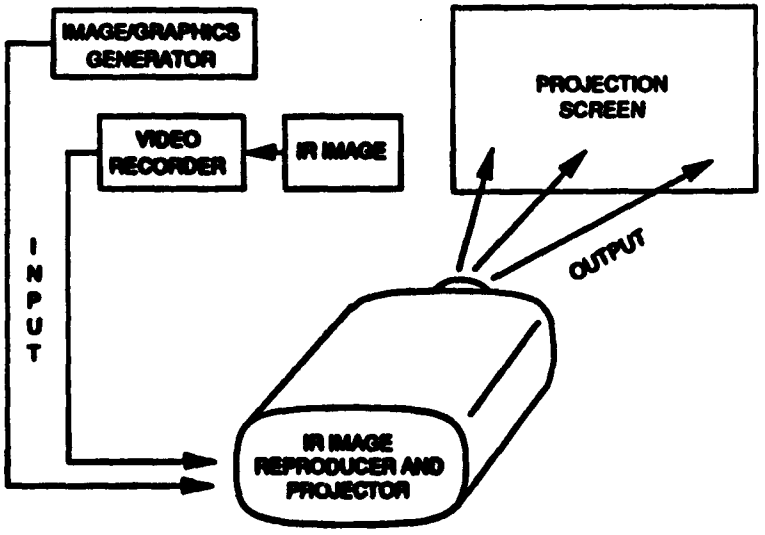
- SELECTED SIMNET TECHNOLOGIES IN MOBILE CONTAINER
- MIDDLE EASTERN TERRAIN DATABASE
- SEMI-AUTOMATED FORCES (SAFOR)
- STEALTH AND PLAN VIEW DISPLAY (PVD) IN VAN
- LARGE-SCREEN REMOTE STEALTH AND PVD
- INTERFACE WITH INTELLIGENCE UPDATING CAPABILITIES

PROJECTED USES OF FLYING CARPET

- INTELLIGENCE UPDATES IN NEAR REAL-TIME
- SIMULATED AIR AND GROUND RECON OF TERRAIN AND FORCES
- WARGAMING OF COURSES OF ACTION
- REHEARSAL OF OPERATION PLANS

DEC 90

NIGHT VISION GOGGLE TRAINING SUPPORT FOR OPERATION DESERT SHIELD



REQUIREMENT

- DEVELOP TRAINING TAPES & MISSION PLANNING GUIDE FOR NVG DESERT OPERATIONS.
- PRODUCE COURSE FOR STUDENTS AT FT RUCKER.
- PRODUCE TRAINING PACKAGE FOR DEPLOYED AND ABOUT TO BE DEPLOYED AVIATORS.
- EXPAND TO INCLUDE GROUND TROOPS.
- COLLECT FEEDBACK ON USE IN SAUDI ARABIA.

RESOURCES/POC

- AVIATION CENTER NVG IPs
- ONE ARI-RUCKER PSYCHOLOGIST FOR 2 MONTHS
- POC: MR. INTANO, ARI-FT RUCKER FIELD UNIT AV 558-4085

MILESTONES

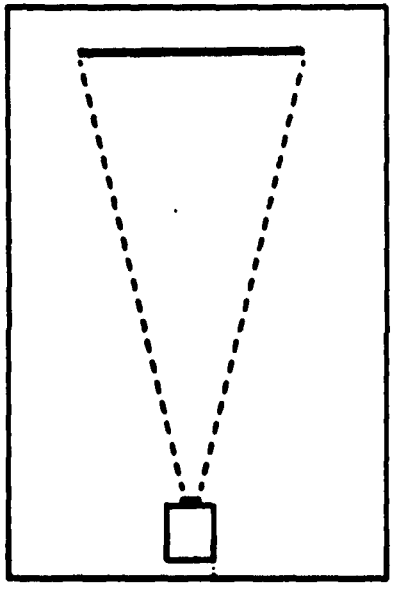
- IMAGERY COLLECTED FROM YUMA PROVING GROUNDS AND IMPERIAL DUNES, CA. ..... 4 SEP 90
- 14 HOURS OF TAPES MASTERED TO 1" MASTER TAPE. ..... 13 NOV 90
- TRAINING TAPES FOR FT RUCKER AND SAUDI ARABIA. ..... 15 DEC 90
- PACKAGE TO SAUDI ARABIA INCLUDING PROJECTOR. ..... 1 JAN 91
- FEEDBACK ON USAGE. ..... FEB 91

DEC 90

NIGHT VISION GOGGLE TRAINING SUPPORT FOR DESERT SHIELD OPERATIONS

TRAINING ENVIRONMENT

DARK ROOM
20X30



COMPONENTS

- NEAR-IR PROJECTOR
- 3/4" VIDEO TAPE DECK
- 9" B/W MONITOR
- PROJECTOR

PROJECTED USES

- LOW COST, PORTABLE TRAINING IN CONUS AND SAUDI ARABIA
- TRAINING FOR ACTUAL DESERT OPERATIONS
- TECHNIQUES FOR IDENTIFYING AVAILABLE NVG CUES IN DESERT OPERATIONS
- ORIENTATION TO HAZARDS PECULIAR TO DESERT OPERATIONS

(3)

DEC 90

EFFECTS OF SUNLIGHT ON NIGHT VISION

ISSUE

- ARI STAFF DISCOVERED WWII-ERA RESEARCH FINDINGS THAT PROLONGED EXPOSURE TO STRONG SUNLIGHT MAY LEAD TO A DETERIORATION IN NIGHT VISION OF UP TO 50%.
- WEARING DARK SUNGLASSES (<10% VISIBLE LIGHT TRANSMISSION) REDUCE DECREMENTS.

OUTCOME

WRITE INFORMATION PAPER FOR ARMY LEADERS TO EXPLAIN THE PROBLEM

RESOURCES/POC

- ONE RESEARCH PSYCHOLOGIST FOR 2 DAYS
- POC: DR. EVANS, ARI-FT BENNING FIELD UNIT AV 835-5589

ACTIONS

- INFORMATION PAPER WRITTEN IN AUGUST 1990
- ARMY LEADERS AND CALL INFORMED OF PROBLEM IN SEPTEMBER 1990

IMPACT

LIGHT TRANSMISSION OF BALLISTIC LASER PROTECTIVE SPECTACLES (BLPS) LOWERED IN OCTOBER 1990.

DEC 90

"COMMAND AND CONTROL EFFECTIVENESS UNDER STRESS"

FT LEAVENWORTH FIELD UNIT SUPPORT OF OPERATION DESERT SHIELD

- APPEARED AS A SECTION IN NEWSLETTER PREPARED BY CALL
- "C2 EFFECTIVENESS UNDER STRESS" MAKES UP MAJORITY OF SECTION ON "COMMAND AND CONTROL"
- INFORMATION IS BASED ON MATERIAL FOR A CHAPTER PREPARED BY FIELD UNIT FOR FM 101-5, STAFF ORGANIZATION & OPERATIONS, & WAS CUSTOMIZED FOR OSD APPLICATION

EMPHASIS OF C2 SECTION ON RECOGNIZED DEFICIENCIES WHICH ARE PROJECTED TO WORSEN UNDER STRESS. EXAMPLES OF TOPICS:

- PLAN AHEAD
- SEE THE ENTIRE BATTLEFIELD
- SIMPLE CONCEPTS, THOROUGHLY PLANNED
- DO NOT ASSUME SUCCESS
- PLANNING REQUIRES TEAMWORK
- FIND ANY ERRORS, BEFORE THEY FIND YOU...
- POC: DR. HALPIN,
  ARI-FT LEAVENWORTH FIELD UNIT
  AV 552-4933

SOURCES OF C2 INFORMATION:

- COMBAT LESSONS LEARNED (WWII, KOREA, VIETNAM, 1973 WAR)
- CALL & ARI NTC LESSONS LEARNED
- C2 PERFORMANCE ASSESSMENT AT 8 DIVISION & 2 CORPS WAR FIGHTER EXERCISES
- OBSERVATIONS FROM 5 DIVISION COMMAND POST EXERCISES
- LABORATORY & FIELD EXPERIMENTS INVOLVING NEARLY 1,500 OFFICERS FROM COMPANY GRADE TO THREE-STAR GENERAL LEVEL:
  - GROUP DECISION MAKING
  - COURSE OF ACTION DEVELOPMENT
  - RAPID DECISION MAKING
  - TIME STRESS & UNCERTAINTY

DEC 90

INFORMATION PAPER

PERI-IK
19 Dec 90

SUBJECT: Accelerated Tech Base Development of Rapid Train-up Package for Tank Gunnery in Support of Operation Desert Shield.

1. Purpose. To provide information on ARI's accelerated development of rapid train-up packages for tank gunnery in support of ODS.

2. Facts.

a. Reserve component (RC) training groups at FORSCOM and TRADOC requested copies of the Rapid Train-up Program for Armor Crewmen that ARI developed for M60A3 and M1 armor force mobilization.

b. The Rapid Train-up Program prepares tank crewmen for combat. It consists of training management guidance for planning and controlling training and training materials to be used by unit NCOs. Training for all combat critical tasks can be completed in 3 days with this training package.

c. ARI will modify existing materials to incorporate doctrinal and equipment changes and will convert M60A3 materials to M1/M1A1. Materials will be integrated with existing AC and RC materials and the complete M1/M1A1 package will be validated and provided to TRADOC.

d. Product will be a portable, low-cost technical skills training package suitable for:

(1) Pre-deployment training

(2) Sustainment training between combat assignments

(3) Rapid reconstitution of crews

(4) Cross-training of crew positions.

Dr. Don Haggard/ AV 464-3450

INFORMATION PAPER

PERI-II
19 Dec 90

SUBJECT: Accelerated Tech Base Development of an Intelligent Arabic Tutor for Military Intelligence (MI) Linguists in Support of Operation Desert Shield (ODS).

1. Purpose. To provide information on ARI's accelerated tech base development of an intelligent Arabic tutor for MI linguists. in support of ODS.

2. Facts.

a. ARI has developed artificial intelligence (AI) language technologies to train mos-specific language skills for MOS 97E.

b. These technologies have been applied to build an intelligent tutor for German that includes automatic natural language parsing and error recognition and remediation.

c. Current work has been accelerated to extend the tutor to Arabic, focusing on Iraqi dialect.

d. The Arabic tutor will present a Desert Shield scenario lesson that integrates language parsing and speech recognition.

e. The Arabic tutor lesson is designed to be delivered on an MS-DOS based portable computer.

f. The tutor will teach and maintain a broad range of Arabic MI skills from Level 1 to Level 2. These skills include pronunciation, listening and reading comprehension, syntax and semantics.

Dr. J. Psotka/ (703) 274-5540

INFORMATION PAPER

PERI-RP
19 Dec 90

SUBJECT: Accelerated Tech Base Family Support Research in Support of Operation Desert Shield (ODS)

1. Purpose. To provide information on ARI's accelerated research on family issues in support of ODS.

2. Facts.

a. ARI conducted world-wide data collection to discover the links between family factors and individual and unit readiness and the links between family factors and the retention of high performing soldiers.

b. ARI accelerated completion of relevant products from earlier research and supported Community & Family Support Center (CFSC) Task Force in examining how family factors are affecting soldier performance and morale during ODS.

c. ARI will collect post-ODS deployment data to compare with pre-ODS data and assess deployment effects on Army families.

d. Initial Findings:

(1) RC component families in urban areas or areas of wide geographical dispersion need services more than those AC families living on Army posts.

(2) Junior enlisted spouses report high stress.

(3) Information systems are need for spouses who cannot attend deployment information meetings, for parents and for "significant others".

(4) Increased community support is needed to improve the utility of such programs as: CHAMPUS, Soldier/Sailor Relief Act and Powers of Attorney.

(5) Units need to improve their planning to support families new to the unit.

(6) Staff and volunteer burn-out is increasing.

(7) Many units, service providers and leaders have implemented ARI suggestions to meet the needs of the families of deployed soldiers.

D. Bruce Bell/AV284-8866/(703)2748119

INFORMATION PAPER

PERI-IJ
14 Nov 90

SUBJECT: Combat Leaders' Guide (CLG)

1. PURPOSE: To provide information on the Combat Leaders' Guide in Operation Desert Shield.

2. FACTS: The Army Research Institute - Fort Benning Field Unit has received and filled requests for copies of the Combat Leaders' Guide (Mech), and the First Infantry Division (Mech) in preparation for deployment to Operation Desert Shield.

a. The CLG project began in 1985 with funds from the TRADOC Training Technology Agency (TTA) as an adjunct to the ARI-Fort Benning Field Unit's on-going Bradley Fighting Vehicle work. The CLG is a prototype standardized, modular job performance aid for combat leaders' use during periods of high stress and fatigue in continuous combat or realistic combat training.

b. The pocket sized handbook contains critical tasks from Soldiers' Manuals and other training materials, in easy to read format, on waterproof tear resistant paper. It is fastened with post screws to permit insertion of deletion of material. It provides fast information retrieval, can be personalized to individual and unit needs, and is usable under low light and in inclement weather.

c. The CLG offers potential for increased operational capability by insuring maintenance of leader readiness. Since the modern combat leader is faced with complex decisions which must be made under conditions of great stress, there is a need for a product to overcome the effects of performance decay over time.

d. Since the CLG has not been adopted as an official Government publication, the supply is extremely limited. The recent Operation Desert Shield requests complement the worldwide interest previously shown by personnel in CONUS and OCONSUS units, TRADOC schools, and Reserve and National Guard Components. Copies of the CLG have been and will continue to be distributed as long as they remain available.

Margaret S. Salter/AV 835-5589

INFORMATION PAPER

PERI-IK
14 Nov 1990

SUBJECT: Flying Carpet Support for Operation Desert Shield

1. Purpose. To describe the Army Research Institute's (ARI's) role in an ongoing initiative to apply Simulation Networking (SIMNET) technology to support Desert Shield commanders.

2. Facts.

a. The Defense Advanced Research Projects Agency (DARPA) and the Institute for Defense Analyses (IDA) are developing a Flying Carpet system based on packaging of selected SIMNET technologies in a mobile container. These technologies include a Middle Eastern terrain database, a map-based Plan View Display (PVD), an "out-the-window" Stealth Display, remote large-screen displays, and Semi-Automated Forces (SAFOR). A near real-time intelligence update capability will be integrated with the system prior to deployment.

b. IDA has asked ARI-Ft Knox personnel to develop a Commander's Guide supporting use of the Flying Carpet system in Saudi Arabia, focusing on the battalion task force echelon. The first draft is largely complete. Primary system uses identified are surrogate reconnaissance, simulated wargaming, and command and staff rehearsal.

c. Prior to deployment, system "shake out" will be accomplished at Ft Knox (3-21 Dec 90) and CENTCOM HQ (Rear) (10-18 Jan 91). ARI-Ft Knox personnel are assisting the Armor School's Command and Staff Dept in the first "shake out". They will use the results to refine the Commander's Guide.

d. The Commander's Guide will be completed by the system deployment decision date (22 Jan 91). One ARI researcher is scheduled to travel to Saudi Arabia with Armor School personnel for 2 weeks in Feb 91 to collect feedback on use of the system and guide.

e. Total ARI resource commitment is 2 research psychologists for approximately 5 months. Travel funds will be provided by DARPA.

Dr Burnside/AV 464-2613

INFORMATION PAPER

PERI-IR
14 Nov 90

SUBJECT: Night Vision Goggle Training Support for Operation Desert Shield.

1. PURPOSE: To describe the Army Research Institute's (ARI) effort in providing a low cost and portable NVG training program and mission planning guide to support Desert Shield flight operations.

2. FACTS:

a. ARI and the Center for Night Vision and Electro-Optics (CNVEO) developed and patented (U.S. Patent #4,948,957) a near-IR projection system for Night Vision Goggle Training. This system is already in use at Fort Rucker, Alabama.

b. ARI in cooperation with CNVEO and the Aviation Center conducted 14 hours of flight operations and taping in and around the Yuma Proving Grounds. These tapes have already been mastered onto a 1" videotape. The imagery is almost identical with Saudi Arabia.

c. Training tapes of the different kinds of terrain encountered in Saudi Arabia will be completed by 15 Dec 90. These tapes as well as the near-IR projection system can be deployed to Saudi Arabia no later than 1 Jan 91. In-country training can begin immediately upon arrival.

d. The training can be expanded to include actual Saudi Arabian terrain and ground troops. The Aviation Center has a complete pallet for recording imagery either in the air or on the ground. The equipment has received an Ari Worthiness Certificate from the Aviation System Command. All taping operations would be conducted during daylight hours.

e. Total ARI resource commitment is 1 research psychologist for approximately 2 months. No travel funds are required unless travel to Saudi Arabia for equipment set-up and additional taping is required.

Mr. Intano/AV 558-4085

(71)

INFORMATION PAPER

PERI-IJ
19 Dec 90

SUBJECT: Detrimental Effects of Sunlight on Night Vision

1. Purpose. To describe the deterimental effects of sunlight exposure on night vision and the preventive effects of sunglass usage.

2. Background. Before and during World War II, reports from Iraq, Turkey, North Africa, and the South Pacific indicated that exposure to strong sunlight may have led to a deterioration in night vision. Subsequent U.S. Navy experimental research confirmed these reports.

3. Facts. The following effects have been documented and replicated in experimental research:

a. Exposures to ordinary sunlight can produce temporary and cumulative effects on night vision. Daily exposure for 3 hours or more can cause an average deterioration of about 50 percent in night vision capability.

b. The effects of daily exposure for three to four hours are only temporary, since the threshold returns to normal after one day's protection from the sun.

c. Wearing Navy-issue dark sunglasses (12-percent transmission, polarizing neutral filters) protected against the above effects of prolonged exposure to sunlight. However, dark glasses which transmitted 12 to 15 percent of light were not of very much use in the arctics, in the tropics, or in those places where light was of extreme intensity.

d. Conclusion - The darker the glasses, the better. It is suggested as a pragmatic test, that if the wearer's eyes can be seen behind the lenses, the lenses are probably not dark enough.

e. An information paper was written on this topic and sent to the Center for Army Lessons Learned and other Army leaders.

Dr. Ken Evans/AV 835-5589

INFORMATION PAPER

PERI-SZC
26 November 1990

Subject: Fort Leavenworth Field Unit Support of Operation Desert Shield

1. Requester: Center for Army Lessons Learned (CALL), U.S. Army Combined Arms Training Activity (CATA), Fort Leavenworth, KS

2. Product: "Command and Control Effectiveness under Stress" is the main section of the chapter Command and Control in CALL's booklet "Winning in the Desert II", which was recently distributed to maneuver commanders from company through corps level in SWA.

3. Background: The material was adapted from text originally developed by the FU staff for Chapter 5 of revised FM 101-5, "Staff Organization & Operations". It is based on lessons learned from actual warfare, the National Training Center, Warfighter Exercises, Command Post Exercises, and C&GS staff classroom exercises. To customize the text for application to Operation Desert Shield, additional principles were drawn from FU field and laboratory data collection experience, analysis of historical literature, and review of available data on human performance in command and control. The work was conducted under RT 1304, Enhancing Command Staff Performance in Combat Operations.

4. Utility: The material was structured for the booklet as a list of ways to maintain C2 effectiveness under stressful conditions. This easy to read section of the booklet will reinforce to commanders the principles needed to maintain quality performance under operational conditions.

Dr. Headley/274-8891

UNCLASSIFIED

INTELLIGENT ARABIC TUTOR FOR MI

DESCRIPTION: Develop and create tools and techniques for applying artificial intelligence (AI) language technologies to train and maintain Level 1 to Level 2 MOS-specific Standard Arabic language MI skills. Current work is exploring a toolset for 97E language skills in German using a robust and powerful parser. Work can be rapidly accelerated to include Arabic. The result of this effort will be an adaptive tutor for MI Arabic using automatic parsing, hypertext, and speech recognition in a Desert Shield scenario.

ADDED CAPABILITY: A portable, automatic language parsing and speech recognition system for mission-critical Arabic concentrated on the military terminology and MOS skills of MI linguists.

BASIS OF ISSUE FOR DESERT SHIELD: Development of a functional tutor integrating hypertext and speech recognition will be completed in April 91, and a complete scenario for Desert Shield integrating automatic parsing and speech recognition by October 91.

PRESENT PROGRAM: TRADOC is currently developing a computer-based tutor for pronunciation of key military words and phrases using advanced speech recognition technology. ARI has a current research program to develop tools and technologies for tutoring MI linguist skills using AI-based parsing techniques for syntax, semantics, and discourse.

Present Funding:

	FY91	FY92
RDTE	671K	630K

ACCELERATED PROGRAM: Accelerated funding will provide rapid integration of automatic parsing, tutoring and speech recognition in an intelligent Arabic tutor for MI. The lesson material will focus on a Desert Shield scenario including locations, directions, maps, and on enemy's actions. The user will be able to both practice speaking words into the voice recognition system, and type those words in longer phrases and sentences, which can be corrected by the automatic parser and tutor.

Accelerated Funding:

	FY91	FY92
RDTE	871K	630K

RISKS OF ACCELERATION: Low risk, based on a successful research and development of a German MI tutor.

EXPECTED OUTCOME: More effective, advanced instruction to acquire and maintain a broad range of Arabic MI skills from Level 1 to Level 2.

NOTES:

Approved By: Edgar M. Johnson

UNCLASSIFIED

Operation Desert Shield/Storm
After Action Report

Tab Five

Family Factors in Operation Desert Shield and Desert Storm

Purpose.

The DCSPER directed that research focus on three issues. First, determine how deployment and mobilization affect family well-being. Second, determine how the Army helps families with problems created by deployment. Third, determine how the increase in family stress affects the Army's ability to complete its mission.

Approach.

The DCSPER directed the Community and Family Support Center (CFSC) to establish an inter-agency Task Force to investigate and report on the status of Army support for families in both the Active Component (AC) and the Reserve Component (RC). The task force consisted of personnel from the U. S. Army Research Institute (ARI), the Walter Reed Army Institute for Research (WRAIR), the U. S. Army Personnel Integration Command (USAPIC) and the U.S. Chaplaincy Services Support Agency.

The effort is being conducted in the following three phases: Phase I, early deployment (October-November 1990), Phase II, the sustainment phase (January-March 1991), and Phase III, the post deployment phase (June - October 1991).

Researchers selected units from posts that had deployed Active Component troops. Combat Arms, Combat Service, and Combat Service Support units participated. At some of the posts visited, reservists had deployed to replace the AC soldiers sent to Southwest Asia. ARI researchers surveyed five posts during October and November 1990. Posts visited were Forts Bliss, Bragg, Hood, McCoy, and Stewart. In addition, 9 ARNG & 11 USAR units were visited. ARI took the lead in selecting reserve units, coordinating all activities for one of the two field data collection teams, and writing up the results of the AC and RC interviews with service providers. All six members of the ARI Family Team participated in the Phase I data collection, and one ARI person participated in Phase II and III.

ARI developed structured interview protocols for interviews with spouses of deployed soldiers, rear detachment commanders, installation commanders, family service providers, and family support group leaders. ARI developed a family member survey instrument in concert with WRAIR, and USAPIC.

During Phase I, the Task Force interviewed 93 Service providers, 40 Army leaders, 67 soldiers, and 416 family members. The Task Force administered surveys to 372 family members during Phase I.

Phase II surveys of deployed spouses were conducted January 1991 - March 1991. During Phase II the emphasis was to update

issues identified in Phase I and to determine the current state of family support. A family team member interviewed family service providers at five installations.

Phase III focused on reunion issues for spouses, returning soldiers, and family service providers. Interviews are being conducted from June 1991 - October 1991. A member of the ARI family team interviewed family service providers at three installations.

In addition to the Task Force actions, the ARI family team took advantage of the scheduled USAPIC fall 1990 Sample Survey of Military Personnel (SSMP) to collect additional data on changes in soldier's attitudes toward Army family support during ODS. ARI contributed questions related to family issues from the 1989 AFRP Survey and later analyzed and contrasted the responses on the SSMP with identical questions from the AFRP survey.

Results.

Several key stressors and stress mediators were identified in this joint effort. They are suggestive of patterns which can give direction to both further research and corrective management actions and are summarized below.

Key Family Stressors

Deployment

During the ODS deployment, the threat of imminent danger has markedly increased levels of anxiety seen in all of the families interviewed, particularly among those who had less deployment experience. Family members not only consistently expressed concerns for the safety of their soldiers in Saudi Arabia but also about the physical hardships that they were facing. The uncertainty associated with the date of deployment was also a source of stress for many families.

Financial

The deployment increased expenses for most of the families interviewed. The types of expenses include: (1) communications (phone, FAX, packages), (2) relocation expenses (for those who have chosen to move even though the Army will not pay for it), (3) childcare expenses, (4) storage of personal possessions in commercial facilities, and (5) expenses associated with deployment (desert BDU's, etc.).

Information

The ability of families to communicate with their deployed soldier varied widely. Some soldiers had ready access to government phones; others had difficulty getting access to a phone. Similarly, the regularity of letters and FAX communications varied

widely across units and individuals.

What the spouses wanted was regular, reliable and timely information from the Army. Spouses attempted to satisfy their hunger for information by watching TV and consulting the rumor mill.

Intra-Family

The absence of the soldier brought out of predictable emotional reactions among the spouses including fears for their own physical safety and loneliness. Similarly, there were predictable reactions such as anxiety, depression, sleep disorders, and acting out among the children, which added to the spouses' burdens.

Key Stress Mediators

Personal / Community Resources

Spouses more skilled at handling ODS stress had: (1) a fair amount of knowledge of how the military works, (2) prior experience with deployments, (3) effective personal coping skills, (4) adequate family finances, (5) a good social/community support network, (6) realistic expectations about what the Army could provide. Also, higher ranking soldiers' families were likely to have more of these characteristics.

Army Actions

The Army requirement that the soldier plan and practice for deployment enabled families to cope better with the stresses of separation. Units that "exercised" this plan seemed to have better-adjusted families.

Families benefitted from what they learned from the pre-deployment briefings. Local information was particularly helpful since it had actual names of agencies and phone numbers to call in various situations.

The AC had a three part system for helping soldiers' families: (1) Rear Detachments (RD) to handle military/legal matters, (2) Family Support Groups (FSG) to help keep families in touch with each other, and to provide needed information on a soldier's status, family services and Army alternatives, and (3) Family Assistance Centers (FAC) that provided information on family entitlement and provided both referrals and direct family services to those who needed them.

The RC units were at a real disadvantage when the RD commander was absent and the unit Family Support Coordinator (FSC) was located several hundred miles away. Often someone, such as a retention NCO, was pressed into service to function as a Family Support Coordinator. In most cases, these substitute FSCs were not trained or experienced in performing these functions.

Both AC and RC families coped best in units that had an active FSG, good liaison with the family service delivery system, and a carefully chosen Rear Detachment Commander.

Two major recommendations were suggested to CFSC as a result of ARI's research on ODS. The first recommendation was to improve family support structures for partial mobilizations. The second recommendation was to designate/train family support augmentation staff for post level units during peace time.

In addition, CFSC is using the findings from ARI ODS research to brief the DCSPER and other interested commands on the impact of ODS on Army families.

ARI family team members either contributed to the development of out-briefs on the effect of ODS on family support or provided them directly to the command staff at each of the installations and units visited.

TAS was provided by two ARI family team members to CFSC on the Army Computer Assisted Telephone Interview (ACATI) of AC and RC spouses and family service providers. The interviews were designed to identify patterns of service use during ODS, the needs of Army families, and the types of resources family service providers needed.

ARI continues to provide TAS to CFSC by reviewing the reports written by CFSC's contractor to insure their technical soundness and utility to the Army. Expected date of project completion is December 31, 1991.

ARI family team members have documented their findings in the following reports:

Bell, D. B. & Quigley, B. Family Factors in Operations Desert Shield and Desert Storm. (1991) Paper presented at the Military Psychology Division Workshop, American Psychological Association Convention, San Francisco, California, August 15, 1991.

Oliver, L., W. & Bell, S. (1991) Family Support and Services in the Army's Active Component. (Research Note). Alexandria, VA: U. S. Army Research Institute.

Harman, J. Family Support Providers in the Army's Reserve Component (RC) (1991). To be included in Teitelbaum, J. M. (Ed.). (1991). Family Factors in Operation Desert Shield: Phase I Report. (Unpublished manuscript). Alexandria, Va: U. S. Army Community and Family Support Center.

Bell, D. B. , Tiggle, R. B. & Scarville, J. (1991). Army Family Research Program: Selected preliminary findings on Army family support during Operation Desert Shield. (Research Product 91-20). Alexandria, VA: U. S. Army Research Institute.

"Family Support in ODS"
2302H2

TOTALS PSYs from Aug 90 - Aug 91 are 2.45

Travel costs from Aug 90 - Jul 91 are $20,100

SELECTING AND CLASSIFYING FOR COMBAT

The Army Research Institute, under the sponsorship of the Deputy Chief of Staff for Personnel, is engaged in an ongoing research project, Building the Career Force, to improve the Army's selection, classification, reenlistment and promotion procedures. It will show what combinations of aptitude, temperament, psychomotor ability and spatial ability, measured at or before entry into the Army, best predict later performance in individual military occupational specialties (MOS). It will also show which indicators of first term performance predict performance in the second term.

Until Desert Storm, the preponderance of data collected for Building the Career Force focused on peacetime performance. Ideally, when selecting and classifying enlisted soldiers, we would like to know the answers to two questions: 1) How will these individuals perform as soldiers in a peacetime environment? and 2) How will they perform in a combat environment?

The group of 49,000 soldiers being followed in Building the Career Force were initially tested in 1986-1987 at entry on a comprehensive battery of tests developed for selection and classification. Over 30,000 of these were tested on a set of performance measures at the end of training. In 1988-89, over 10,000 members of this group were again tested using hands-on tests, job knowledge tests, and rating scales. Testing lasted 8 hours. By following this group through their Desert Storm experience, we will have a unique opportunity to determine what individual characteristics predict successful combat performance. Later, some of these same soldiers may be tested on a more comprehensive set of second tour measures, providing an additional basis for comparison.

In July, 1991, ratings data were obtained at Forts Stewart and Benning on over 100 soldiers from this group who also participated in Desert Storm. Items on the rating scales referred specifically to the performance of each soldier while stationed in Southwest Asia. These data will be linked to the previously collected data to answer these questions: 1) Do tests which predict peacetime performance predict combat performance in a similar way? and 2) Are the top peacetime performers also the top combat performers?

Future efforts to collect data on individual combat performance will build on the lessons of Desert Storm. While combat ratings were being collected at Forts Stewart and Benning, interviews were being conducted with Desert Storm participants at these same locations. These interviews identified indicators of good and poor performance in the conflict. These indicators will be used in generating future measures of combat performance.

Utilization to Date

Data collected from this effort have already been used to address questions raised by LTG Reno, Deputy Chief of Staff for Personnel, concerning the relationship between physical fitness and performance during Desert Storm. Rating data revealed that less than 10% of over 200 soldiers examined were judged to have been in poor physical condition while serving in Desert Storm. Interviews with Desert Storm participants revealed that they felt their physical fitness training had prepared them adequately for combat.

Costs

One major source of costs associated with this effort involved sending four data collectors (two contractor, two in-house) to both Ft. Stewart and Ft. Benning. Eight person-weeks of labor at $2K a week cost approximately $16K. Travel costs for the two data collections were approximately $8K. Other costs, involving development and printing of data collection forms, totalled approximately $10K. Costs of analyzing and reporting data collected are expected to reach another $12K. Total estimated costs for this effort = $16K + $8K + $10K + $12K = $46K.

PERI-RG
20 August 1991

INFORMATION PAPER

SUBJECT: 1991 Surveys of Total Army Military Personnel (STAMP)

1. Purpose. STAMP is a program to provide information to assist personnel officials in setting policies and procedures during the current demobilization/redeployments and in the downsizing to follow. At the direction of CSA, the DCSPER has tasked ARI to conduct several surveys of military personnel in the Active and Reserve Components of the Army. Three Surveys were developed to respond to this tasking:

- Initial Survey of Mobilized Reserve Components Personnel - Completed
- A 2-Page Operation Desert Shield/Storm Supplement to the Army Career Transition Survey - In progress
- Main STAMP Survey of Active and Reserve Component Personnel - Due in Field by September

2. Initial Survey of Mobilized Reserve Components Personnel.

a. Initial STAMP and the Main Survey efforts were developed in coordination/consultation with the Offices of the Assistant Secretary of the Army for Manpower and Reserve Affairs (ASA/M&RA), the Chief of Staff--Assessments & Initiatives Group (OCSA/CAIG), the Chief of the Army Reserve (OCAR), and the Director of the Army National Guard (NGB), the Inspector General, and the Surgeon General, and with HQ USAREUR, US Army Forces Command (FORSCOM), US Army Recruiting Command (USAREC), National Committee for the Support of the Guard and Reserve, US Total Army Personnel Command (PERSCOM), Community and Family Services Command (CFSC), Army Career and Alumni Program (ACAP), Walter Reed Army Institute of Research (WRAIR), US Army Personnel Integration Command (USAPIC), Academy of Health Sciences, Center for Army Leadership (CAL), and Chaplaincy Services Support Agency.

b. The Initial Survey was a 6-page Survey developed, produced, and distributed using ARI's in-house Survey capabilities. It was sent to 1400 mobilized USAR and ARNG personnel at the end of March, 1-month after Tasking. This initial survey focused on providing immediate information on potential retention influences such as: mobilization experiences; family factors; personnel utilization; unit cohesion and morale; demobilization experiences; expectations about reentry into civilian life; and perceived training adequacy and utilization.

c. ARI received 618 completed surveys by the cut-off date of 5 July 1991. A substantial percentage (58%) of the soldiers responding to the survey sent in written comments ranging from one line to several hand or typewritten pages.

3. Results. Findings from the Initial Survey have been briefed to the DCSPERS, DMPM, HRD, and the Action Officers for the USAR and ARNG. These results indicate that:

a. Reserve soldiers were proud of the operation and generally satisfied with their Army experience.

b. Soldiers deployed to Southwest Asia were more like to stay past their enlistment and were more positive about recommending enlistment in the Reserves to others.

c. Most thought that the deployment went well, but. . .

- Information was often inaccurate or non-existent
- Reserve soldiers were poorly treated by the Active Component soldiers
- Leadership was inexperienced and unconcerned about their troops
- Mail service was inadequate and personnel records were unavailable, particularly after deployment

d. Soldiers felt confident they could perform well but were less confident in their leaders. Those responding to STAMP reported a high level of stress in their military jobs and their family life; however most thought their families were being well taken care of while they were away.

e. Many soldiers suffered some financial hardship, but thought they would match their previous monthly income in less than 3 months. Those who were self-employed before mobilization suffered the most financial impact indicating it would take as much as 1 year to return to pre-mobilization income.

4. **Conclusions and Implications.** Findings from the Initial Stamp Survey were briefed to the DCSPERS, DMPM, HRD, and Action Officers from the USAR and ARNG during July 1991. Information from this survey has provided important information for the development of the Main STAMP Survey which will be sent to 50,000 Active and Reserve Component personnel during September 1991.
Most of the soldiers responding to the Initial Survey thought that operations like Operation Desert Shield/Desert Storm were very likely in the next 10 years. They believed that the problems and concerns they were expressing would impact readiness, retention, and morale. Implications from this small sample of Reserve soldiers suggest that Army policy makers needed to review and improve the following areas to ensure that the "Total Army Concept" works in the future:

- Information accuracy and timely dissemination at all stages of mobilization and deployment
- Treatment of the Reserve Component soldiers by the Active Component soldiers
- Leadership training and experience for both Active duty and Reserve soldiers
- Pre-planning and staffing at mobilization sites and deployment sites to reduce confusion and to utilize personnel in meaningful jobs.

Timothy W. Elig
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MANPOWER AND PERSONNEL POLICY RESEARCH GROUP
RESEARCH SUPPORT FOR
OPERATION DESERT SHIELD/DESERT STORM

- 1991 SURVEYS OF TOTAL ARMY MILITARY PERSONNEL
  - ARI DEVELOPED THREE SURVEYS
    - INITIAL SURVEY OF MOBILIZED RESERVE COMPONENT PERSONNEL - COMPLETED
    - ODS/S 2-PAGE SUPPLEMENT TO THE ARMY CAREER TRANSITION SURVEY - IN PROGRESS
    - MAIN STAMP SURVEY - DUE IN FIELD BY SEPTEMBER

Source: 1991 Initial STAMP Survey of Mobilized Reserve Components Personnel

PREPARED AUGUST 1991
U.S. ARMY RESEARCH INSTITUTE
(STMP-A)

INITIAL SURVEY OF MOBILIZED RESERVE COMPONENT PERSONNEL FOR OPERATION DESERT SHIELD/DESERT STORM

- **PURPOSE**
  - PROVIDE IMMEDIATE FEEDBACK ON THE ATTITUDES AND CONCERNS OF RESERVE COMPONENT SOLDIERS
  - SERVE AS PILOT TEST OF QUESTIONS AND METHODS FOR THE MAIN STAMP SURVEY
- **SURVEY SAMPLE**
  - ONLY MOBILIZED USAR AND ARNG PERSONNEL
  - MAILED WORLDWIDE TO 800 ENLISTED AND 600 OFFICERS IN LATE MARCH
  - 618 SURVEYS RECEIVED BY 5 JULY
  - 58% OF RESPONDENTS SENT IN WRITTEN COMMENTS

Source: 1991 Initial STAMP Survey of Mobilized Reserve Components Personnel

PREPARED AUGUST 1991
U.S. ARMY RESEARCH INSTITUTE
(STMP-A)

INITIAL STAMP SURVEY OVERVIEW AND IMPLICATIONS

- 6-PAGE SURVEY DEVELOPED, PRODUCED, AND DISTRIBUTED IN-HOUSE WITHIN 1-MONTH OF TASKING
- RESULTS BRIEFED DURING JULY TO DCSPERS, DMPM, HRD, AND ACTION OFFICERS FOR USAR AND ARNG
- FINDINGS INDICATE THAT SOLDIERS WERE PROUD OF THE OPERATION AND GENERALLY SATISFIED WITH THEIR ARMY EXPERIENCE
- IMPROVEMENTS ARE SUGGESTED IN THE FOLLOWING AREAS:
  - INFORMATION ACCURACY AND DISSEMINATION AT ALL STAGES OF MOBILIZATION AND DEPLOYMENT
  - LEADERSHIP EXPERIENCE AND CONCERN FOR THEIR TROOPS
  - TREATMENT OF THE RESERVE SOLDIERS BY THE ACTIVE DUTY SOLDIERS
  - MAIL DELIVERY AND AVAILABILITY OF PERSONNEL RECORDS PARTICULARLY AFTER DEPLOYMENT
  - PRE-PLANNING TO UTILIZE PERSONNEL IN MEANINGFUL JOBS PARTICULARLY THOSE SOLDIERS CALLED AWAY FROM CIVILIAN JOBS

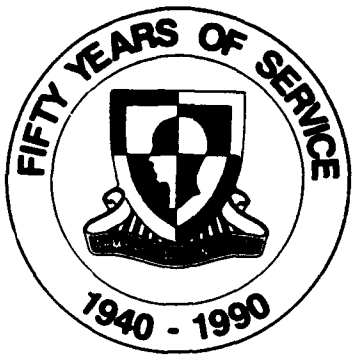
Source: 1991 Initial STAMP Survey of Mobilized Reserve Components Personnel

PREPARED AUGUST 1991
U.S. ARMY RESEARCH INSTITUTE
(STMP-A)

Operation Desert Shield/Storm
After Action Report

Tab Six

Desert Storm



LESSONS LEARNED IN 'FIELDING' RESEARCH KNOWLEDGE

By Dr. Stanley M. Halpin

Introduction

For the past 15 years the Army Research Institute (ARI) Field Unit at Fort Leavenworth, KS has executed a research program designed to answer two simple questions: How does Army command and control work? What changes in procedures, individual and group training, and systems' support will help command and control work better? When President Bush announced he was "drawing a line in the sand" we knew that the value of our efforts was going to be put to the ultimate test by our friends and colleagues in uniform.

In common with the thousands of research scientists and engineers who have contributed to Army doctrine, tactics, techniques, procedures, materiel, and training, we immediately began re-evaluating the products we have produced and those in the pipeline to see what we could do in the short-term to help support Desert Shield. This article provides an overview of the steps we took to provide that support, and discusses the lessons we learned which may apply to others in the R&D community.

The products produced by the ARI Fort Leavenworth Field Unit are somewhat intangible. When the auditors and bean-counters come through, the usual metric of performance is the number of published reports, but the published reports in fact represent a relatively small portion of our production; they primarily serve to document past work for archival purposes.

Our research generates observations and data on human performance in command and control (C^2). Based on that data, we develop concepts, ideas, and suggestions. Our real products are recommendations for changes in tactical-staff techniques and procedures, changes in the systems which support C^2, or changes in individual and group training for commanders and staffs. Such recommendations are more often presented as informal or formal briefings than as reports.

Our research is typically not in direct support of troop units or materiel developers, but rather is done in conjunction with organizations responsible for establishing C^2 systems requirements, establishing C^2 training requirements and procedures, developing C^2 doctrine and procedures, or training individuals and groups in the classroom.

Thus, we faced a compound dilemma. In the first place our products have only an indirect impact on an army in the field; they are designed to support the training, doctrine, and systems development community. Second, many of our products are not neatly packaged as reports which could be sent to troops in the field to read and consider. Third, our usual customers also play an indirect role; they develop and produce requirements and doctrine, not tanks or rifles.

To identify meaningful ways to provide near-term support to our forces in Saudi Arabia, we had to redefine the problem. Rather than asking "what products do we have that will support the commander in the field?" we needed to ask "what do we know that will help the commander in the field?" The search then could focus on a "delivery mechanism" for ideas, not for reports or briefings.

We found that the Combined Arms Command, Fort Leavenworth, had anticipated the requirement and created a solution in the form of Special Editions of the Center for Army Lessons Learned (CALL) Newsletters. The first of these, published in August, 1990 (*Winning in the Desert*; CALL Newsletter 90-7), focused on the physical and geographical factors in desert warfare. The second newsletter (*Winning in the Desert II: Tactics, Techniques and Procedures for Maneuver Commanders*; CALL Newsletter 90-8), published in September 1990, became the vehicle for us to deliver our "products" to the field by highlighting findings and recommendations on human performance in C^2.

Doctrine

Shortly before Operation Desert Shield began, we had provided the Command and General Staff College (CGSC) with the final draft of Chapter 4, "Command and Control Process" in the new FM101-5, *Command and Control for Commanders and Staff.* The integration of our own and others' findings that formed the basis for the doctrinal recommendations in that chapter became the starting place for our input to *Winning in the Desert II.* The goal was not to reiterate standard doctrine, or even to promulgate new doctrine for command and control.

The field commander could be assumed to have a detailed grasp of the current doctrine and could equally be assumed to have the ability to develop new techniques and procedures to meet his unique requirements. Rather the goal was to point out hidden pitfalls which the typical commander may not be aware of, but which could have disastrous effects. For example, most individuals are quite confident of their ability to function effectively for long periods without sleep; however, a large and compelling body of research has shown that one of the early casualties of sleep loss is judgment, including one's judgment about one's own ability to perform complex tasks. Our particular perspective comes from the integration of an understanding of the tasks, functions, and processes involved in command and control with an understanding of human capabilities and limitations when performing these complex tasks. Thus, our goal was to provide the field commanders with the information needed to recognize possible limitations in human capabilities, and to suggest methods for avoiding or alleviating the conditions that reduce those capabilities. The overall rubric for our recommendations was "C^2 Effectiveness Under Stress."

Stress

In preparing our input for CALL, we were sensitive to the "so what" test. We assumed that the target audience, maneuver commanders, already knew Army doctrine, and had already practiced and refined C^2 techniques and procedures in successive levels of command and in frequent map exercises, command post exercises, and field exercises. We assumed that they were competent leaders, able to evaluate the professional strengths and weaknesses of their subordinates. We also assumed that they would be impatient with what might seem to be "blinding flashes of the obvious."

The key element usually missing from training environments is a high level of stress, but these commanders would be operating in an environment under the compound influence of several stressors: sudden transportation across multiple time zones to an unfamiliar area; an unfamiliar culture; and physically fatiguing weather conditions. Furthermore, in combat they would experience all of the stress of combat itself, to include the sleep loss and fatigue associated with continuous operations, intense time pressure, and high levels of uncertainty.

By focusing our recommendations on methods for recognizing and dealing with degradation of performance under stress, we hoped to provide the basis for our audience to gain insights on their own and their subordinates' behavior; those insights could be expected to help them avoid serious command and control problems.

Source Material

The preparation of our portion of the CALL Newsletter involved an intense effort by an ad-hoc team of researchers from within the Field Unit. Headed by Jon Fallesen, the team also included Rex Michel and Jim Lussier; other members of the Field Unit staff contributed suggestions and helped identify appropriate source material. The sources used included:

- Combat lessons learned from World War II, Korea, Vietnam, and the 1973 Arab-Israel conflict;
- Material from the ARI and CALL National Training Center (NTC) data base;
- Data and observations collected by ARI at 13 Division-level CPXs and two Corps-level CPXs;
- Summary assessments from Battle Command Training Program (BCTP) observer/controllers concerning common C^2 problems;
- An in-depth ARI task analysis of the situation estimate process;
- Participation in and observations of simulated-staff classroom exercises in the Tactical Commander's Development Course (TCDC), the Command and General Staff Officer's Course (CGSOC), and the Combined Arms Staff and Service School;
- Data and observations from a series of ARI laboratory and field experiments which have included a total of over 1,500 officers from company grade to General, and which have explored a range of issues including the components of tactical decision making expertise, and decision making under time pressure or under information uncertainty;
- A series of evaluations of decision aids and information technology;
- Hundreds of articles from our own archives and the psychological literature on stress, fatigue, continuous operations, decision making strengths and weaknesses, group decision making, course of action development and analysis, and critical information requirements.

Over a five day period the team reviewed, brainstormed, and distilled this information and wrote what became the bulk of the command and control portion of *Winning in the Desert II.* CALL review of the draft input helped refine the style and sharpen the message for the intended audience.

A complete rehash of the ARI recommendations on C^2 effectiveness under stress is not appropriate here; our focus in this article is on lessons learned in the process of translating intangible, some would say ephemeral, findings and recommendations, taking them out of the R&D or combat development or training development context, and applying them in the "real world" of the field commander. Exploring one of the items will illustrate the process: ***The enemy is planning too! Remember to wargame your plans dynamically. Do not just attack a static template or assume he will stand still for you.***

In retrospect, this recommendation might seem to have been 180 degrees off the mark; the Iraqis don't seem to have done much planning, and a static template would have provided an accurate picture of what was faced by our forces. However, the historical record and our laboratory and field data consistently point to problems in this area. It is difficult, particularly under stress, for most people to engage in complex "what-if" mental exercises. The most common failure shows up as a simplifying assumption, usually wrong, that what is now will forever be.

While the concept of "wargaming" is firmly established in our doctrine, in practice it is often neglected or done with such simplifying assumptions. We may never know whether any maneuver commander read and considered the recommendation, but if only one tank company commander was provided with a new insight on the need to avoid such assumptions, then the effort spent on *Winning in the Desert II* was worthwhile.

Lessons Learned

The process described above and our experience during that intense period in late August and early September provide several lessons for the R&D community. The first is that the "products" which we labor to produce in support of the combat, training, doctrinal, and materiel developers in peacetime will often seem irrelevant to the field army, particularly under wartime conditions. We rely on others to serve as intermediaries, and few laboratory products are identifiable as such when they reach the field. Nevertheless, the data and observations obtained during "product development" represent a wealth of knowledge and experience which can and should be applied directly to problems of the army in the field, in peacetime as well as wartime.

The second lesson is that archival reports seldom can contain more than a fraction of the total "knowledge and experience" which is gained at the cost of much time and the commitment of significant resources. The ARI Field Unit at Fort Leavenworth is particularly fortunate in having had a stable staff consisting of professionals with many years of experience focused on a relatively narrow problem area. The "institutional memory" of the unit is extensive, and in this case was the critical resource which allowed us to respond. Steps should be taken by R&D managers to consciously develop and take advantage of that type of resource; this could include steps to avoid personnel and research program turbulence or steps to capture critical knowledge.

The third lesson is that war is different. Each war is different from all others, each battle within a war has its own unique characteristics. But, most importantly, every war is different from any training exercise or system evaluation exercise.

Our most valuable source of information was that derived from the 1973 Arab-Israeli conflict. That information gave us a benchmark to filter our recommendations, so that we could exclude those which were contradicted by actual experience in war.

Conclusion

There is much that can be learned from laboratory and field data collection that will make a difference in wartime, but predicting ahead of time which conclusions will hold up is quite a risky business. Our most valuable source of information was that derived from the 1973 Arab-Israel conflict. That information gave us a benchmark to filter our recommendations, so that we could exclude those which were contradicted by actual experience in war.

As this article is being written, the ARI Field Unit at Fort Leavenworth is again working with CALL, this time to help structure a survey of combat commanders to obtain feedback on their experiences in Operation Desert Storm. Careful planning and appropriate data collection now can help build the historical record of "lessons learned" which will provide the next generation of researchers a "so-what" filter for their work.

STANLEY M. HALPIN has been the chief of the U.S. Army Research Institute Field Unit at Fort Leavenworth, KS since 1983. He has a B.S. in industrial and labor relations from Cornell University (1965) and an M.S. and Ph.D. in social psychology from Purdue University (1970). In his 20 years with the Army (19 with ARI) he has conducted and directed a range of research projects exploring individual and group decision making in the context of computer supported C². Halpin is the co-editor of Information Technology for Command and Control, a book recently published by IEEE Press.

Operation Desert Shield/Storm
After Action Report

Tab Seven

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INDIVIDUAL READY RESERVE (IRR) CALL-UP: SKILL DECAY

Need and Objective:

The Director of Military Personnel Managment tasked ARI to determine the "extent of skill decay" in the IRR call-up for Operation Desert Storm and report the findings in early April.

Approach and Method:

Reservists were identified and tracked through the Army Training Requirements and Resources System. A questionnaire was developed and administered to those not yet deployed. Hands-on and written diagnostic test scores were gathered from the mobilization stations. An assessment was made of the conditions under which these data were collected in order to determine which tests yielded reliable data. From the data collected under suitable conditions, along with information from other records, an integrated data base was formed and analyzed to determine the extent of decay for those MOSs with interpretable data.

Results:

- Skill decay was evident in written diagnostic and certification tests and weapons qualifications scores.
- Skills assessed by written tests decayed mostly within the first 6 months since separation; weapon qualification skills decayed mostly after 10 months.
- SQT was the strongest predictor of skill and knowledge retention, followed by AFQT.
- Skill retention was higher for those who entered the IRR directly from active duty.
- Skill decay was higher in Armor and Combat Engineer CMFs and lower in Infantry, Mechanical Maintenance, and Supply and Services CMFs as determined from the questionnaire.
- Skill retention was better in CMFs that had more opportunities for soldiers to use their MOS skill in civilian jobs.

Resource Investment:

18 person-months and $20K contract for data entry. This includes investment for "IRR Call-up: Attitudes, Motivation and Concerns."

Final Application:

The results will be briefed to the Senior Staff Council on 10 September 91. The results can be applied to develop policies and plans for future mobilizations.

EFFECTS OF SUNLIGHT ON NIGHT VISION

I. Need and Objective. During a literature search for a recently initiated research project on unaided night vision, some important research findings from the World War II era were uncovered. These findings indicated that prolonged exposure to strong sunlight can lead to a temporary deterioration in night vision of up to 50 %, and that wearing dark sunglasses with less than 10 % visible light transmission can prevent this loss of night vision. Due to the potential importance of these research findings for desert night operations, our objective was to expeditiously inform Army leaders of the problem and its solution.

II. Approach. An information paper describing the problem was written for Army leaders in August 1990. This information paper was widely disseminated throughout the Army, including the Chairman of the Joint Chiefs of Staff, the FORSCOM Commander, and the Center for Army Lessons Learned (CALL). ARI also encouraged the U.S. Army Medical Materiel Development Activity to lower the light transmission of the sunglass portion of the Ballistic-Laser Protective Spectacles (B-LPS), recently fielded to many armor and infantry units. Another solution to the problem was publicized in the January 1991 issue of the ARI Newsletter. This solution involved the wearing of standard issue Sun, Wind, Dust goggles in combination with either civilian or military sunglasses.

III. Results. Army leaders were effectively informed of the problem and its solution. The U.S. Army Medical Materiel Development Activity lowered the B-LPS light transmission standards in October 1990, in time for the manufacturer's next production run.

IV. Resource Investment. Resources expended included an estimated .25 professional staff years, an expenditure of $316.35 for travel, and the expenses involved in publishing one issue of the ARI Newsletter.

V. Final Application. All actions in direct support of Operation Desert Shield/Operation Desert Storm have been successfully completed. However, research in other areas of unaided night vision continues. Planned research areas include investigating the effects of prolonged dark adaptation on night vision (e.g., illumination thresholds, peripheral acuity, movement detection), the effects of sunlight attenuation on subsequent dark adaptation, and the effects of practice on night visual performance. During the fourth quarter of FY 91, an exportable unaided night vision training package recently developed for naval aviators will be explored to determine its suitability for use in infantry training.

A SURVEY OF THE INFANTRY (RT-12) INDIVIDUAL READY RESERVE (IRR)

I. Need and Objective. In January 1991 a partial mobilization of the IRR occurred in conjunction with Operation Desert Storm. This mobilization involved personnel who had been out of active service for 12 months or less (RT-12). The command group at Fort Benning enlisted the support of ARI to collect and archive thorough information about this historic mobilization of infantry reserves. Our objective was to obtain as much information as possible about the IRR personnel, the procedures used in their processing and training, and lessons that were learned in the mobilization.

II. Method. Research plans were developed jointly with the U.S. Army Infantry School, the 29th Infantry Regiment, and the Infantry Training Center. An extensive IRR survey was developed and revised. Survey data were then collected on 15 infantry IRR training companies. Supplementary personnel information was then sought from documents in Military Personnel Record Jackets for approximately one fourth of the surveyed soldiers. Training performance data were collected and one IRR company was observed throughout its entire processing and training to provide an enhanced set of performance data and to provide interpretation for findings from the larger sample. After all IRR soldiers had been trained, a training survey was administered to the IRR trainers.

III. Results. An interim report based on the findings of one third of the IRR soldiers surveyed was written and submitted to the Commanding General of Fort Benning in June of 1991. In summary, the typical infantry RT-12 soldier could be described as having left active duty about six months prior to recall at the age of 23 with a rank of corporal. He had completed about 3 years of service. He had remained fairly well-trained and reasonably fit. Although he did not like having his job, schooling and family life interrupted, he returned as called. From the soldier's perspective, he would have preferred longer notice, more informative orders, more efficient in-processing and assignment directly to a unit (preferably his old unit). He felt a little insulted that he was in a basic training environment and was not sure why he was there. He thought it very likely that he would go to combat and was not sure whether he was ready. He was concerned about his family and frustrated by lack of information about his new assignment. He thought he needed more training, but that he could get it in a unit.

IV. Resource Investment. Resources expended included an estimated 1.5 professional staff years and $500 for printing.

V. Final Application. The interim report was well-received by the CG; he termed it "superb." A briefing on the final results was given to the Fort Benning Chief of Staff on 12 August 1991.

ARI DESERT SHIELD/DESERT STORM SUMMARY REPORT:
COMBAT LEADERS' GUIDE (CLG) (Technical Advisory Service)
POC Marnie Salter, Fort Benning Field Unit, AV 835-5589

I. NEED: Beginning in mid August 1990, the Fort Benning Field Unit began to receive urgent requests for multiple copies of the Combat Leaders' Guide from units which were starting to deploy to Operation Desert Shield/Desert Storm. Requests from the 197th Infantry Brigade (Mech) (Fort Benning) and from the 24th Infantry Division (Mech) (Fort Stewart) were followed by similar requests from the 1st Infantry Division (Mech) (Fort Riley), the 48th Infantry Bde (Mech) Georgia Army National Guard, and the 155th Infantry Bde (Mech) Mississippi National Guard, in anticipation of deployment. Shortly thereafter, requests were received from the 12th Cavalry Regiment (Fort Knox) for CLGs to support their training of Individual Ready Reserve soldiers, and from the 411 MP Company (Fort Hood), already in Saudi Arabia, which wanted copies.

II. APPROACH: Over 600 CLGs were provided from the existing supply to support the previously noted requests; several hundred more were distributed in small numbers as requests were received from individuals and other units. Since the CLG, a pocket sized, waterproof job performance aid for leaders' use during periods of high stress and fatigue in continuous combat or realistic combat training was in extremely limited supply, the Director of ARI's Training Research Laboratory (TRL) requested that an updated version be developed to meet the needs of, and based on feedback from, desert operations.

III. RESULTS: A usage survey was developed and administered to personnel from the 24th ID, the Mississippi and Georgia National Guards, and both the Observer Controllers and OPFOR (1/52 Infantry (Mech)) from the National Training Center to help serve as field validation/verification of the CLG. Extensive small group and individual interviews were conducted with personnel from these units. The original CLG product Combat Leaders' Guide: Platoon Leaders, Platoon Sergeants, and Squad Leaders was rewritten, based on this feedback.

IV. RESOURCE INVESTMENT: $24,000 was forwarded from HQ, TRL to cover the cost of printing a new CLG. Personnel time included 1/3 PSY (TAS) for one Research Psychologist, GS 13, and 1/12 PSY secretarial support. Also incurred were costs of travel and TDY to the National Training Center, and to Fort Stewart; transportation and postage fees associated with distribution of CLGs; and the expenses associated with survey construction and administration, and the rewrite of the CLG.

V. FINAL APPLICATION: The newly completed Combat Leaders' Guide: Leader Handbook is at the Government Printing Office, awaiting bids. An estimated 3200 CLGs will be available for distribution by the end of the fiscal year. The CLG meets a soldier need, and offers potential for increased operational capability by insuring maintenance of leader readiness.

INTELLIGENT TUTOR FOR ARABIC MI LINGUISTS

Need and Objective:

Due to a shortage of instructors and limited second language exposure in the field, MI linguists tend to lose their language skill after graduating from the Defense Language Institute (DLI). To maintain the skill of Arabic linguists and to focus training on MOS-specific language, the ARI designed an extension of an intelligent language tutor for 97E from German to Arabic.

Approach and Method:

A needs analysis was conducted through discussion with DLI to identify the kinds of linguistic errors prevalent in the productions of Arabic graduates. A grammar for Arabic was codified by setting parameters on universal parsing principles deployed in the German parser. Error handlers were designed to identify major classes of syntactic errors in Arabic. A modification of DLI's standard phonetic transcription method was developed to mediate between student and parser. Multi-window lesson shells were designed to apply the tutoring rules developed for German to a Desert Storm scenario centered on territory in Kuwait. A voice output facility was made accessible from any point or window in the lesson. Script representing Modern Standard Arabic was used to present text; the voiced portions of the lesson were recorded by a speaker of Iraqui dialect. A voice input facility was installed using speech recognition technology being developed by TRADOC.

Results:

- A prototype Arabic lesson was demonstrated in July 91 incorporating text presentations in Arabic script, voice output by an Iraqui speaker, listening and reading comprehension exercises using manipulations of a geographical map, and production exercises invoking grammatical knowledge.

- The design specifications for a syntactic parser and lexical representations were presented in July 91.

- A demonstration of the Arabic parser is scheduled for November 91, to be integrated with the tutor, permitting analysis of free-form Arabic sentences input by students.

Final application:

Finalization of the Arabic tutor will continue through June 92, to ensure that errors of sentence construction are adequately detected and diagnosed. The findings on degree of extendibility of the parser from German to Arabic, to be reported in November 91, can be applied to developing tutors in any language.

From: ARTIC::FTKNOX 8-AUG-1991 16:12:14.32
To: STCLAIR
CC: FTKNOX
Subj: Rapid Train-Up Package/Flying Carpet

AN INITIAL ASSESSMENT OF THE FLYING CARPET (FC) SYSTEM

1. Need and Objective. As part of Project Odin, the Defense Advanced Research Projects Agency (DARPA) and the Institute for Defense Analyses (IDA) developed the prototype Flying Carpet (FC) system to help Desert Shield tactical commanders plan and prepare for future battles. This system integrated combined arms simulation and other technologies to display a simulated Middle Eastern battleground with static force displays. The Armor School conducted an initial assessment of the FC during January 1991, with the objective of identifying potential system applications and refinements needed. Two Army Research Institute (ARI) personnel developed a draft commander's guide for use of the FC system and assisted in the initial assessment, at the request of Armor School and IDA representatives.

2. Approach. ARI personnel developed a draft commander's guide based on available descriptions of projected FC capabilities. They also monitored the five-day division-level FC assessment, developed a questionnaire and administered it daily, and participated in daily and final after action reviews (AARs) conducted by Armor School personnel.

3. Results. The assessment determined that the FC was not ready for deployment to support Operation Desert Storm, since some projected system capabilities were not yet available. ARI questionnaire results and observations identified numerous system refinements needed and several potential uses for the FC. These have been documented in a draft Research Report (attached) that includes the draft commander's guide. An ARI representative also provided the initial suggestion that the FC system be used to re-create and replay Desert Storm battles.

4. Resource Investment. Technical Advisory Service (TAS) was provided for a total of 1340 professional staff hours.

5. Final Application. ARI support of the initial FC assessment was completed as requested by Armor School and IDA representatives. The results are being used to refine the FC system. The suggested application of the system to re-create battles is being implemented in a major ongoing project to re-create the Battle of 73 Easting. ARI personnel are monitoring this effort to determine possible future involvement. Continued ARI involvement has been invited by a senior IDA representative.

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RAPID TRAIN-UP PACKAGE (RTUP) FOR TANK GUNNERY

1. Need and Objective. During the initial phase of mobilization, Reserve Component (RC) units are expected to deploy rapidly. RC units, however, have unique training problems that make it difficult to maintain a high state of combat readiness. Thus, rapid and efficient training is required to transition from current to combat levels of proficiency. Previous surveys had indicated that the most efficient approach was to provide "opportunity" training of individual skills and knowledges while utilizing available scheduled training periods for collective training. However, for a number of reasons, "opportunity" training would be effective only if tailored training materials were provided. The Army Research Institute at Fort Knox had developed and tried a number of different training formats and materials to support NCO conducted train-test-train programs for individual knowledge and skill enhancement for tank crewman. At the onset of the persian Gulf crisis, the unit was requested to develop similar rapid train-up materials for RC use with M1 and M1A1 tank crews.

2. Approach. Review of previous materials indicated that the most efficient package would include: training modules for individualized test-train-test of those tasks performed during combat, small graphic training aids to also be used as job aids when performing pre-post combat tasks, procedural checklists to also use as job aids for pre- and post-combat tasks, and self-study guides presenting knowledges basic to combat gunnery. Available materials in each of these categories were then obtained and modified for use with M1 and M1A1 tanks. All materials were then organized by skill level and subject matter paralleling the organization of the 19K soldiers manual with manual references and a cross-index of materials by task. A strategy for using the package and recommended techniques for using each of the different components was then developed.

3. Resource Investment. $345K in contractor support and 2000 in-house staff hours were provided to develop the packages.

4. Final Application. The completed Rapid Train-Up packages were submitted to the U.S. Army Armor School and the Training and Doctrine Command for publication and distribution.

INDIVIDUAL READY RESERVE (IRR) CALL-UP: ATTITUDES, MOTIVATION, AND CONCERNS

Purpose:

The U.S. Army Research Institute was tasked by the Office of the Deputy Chief of Staff for Personnel (DA-DMPM) to assess skill decay of the IRR call-ups for the Persian Gulf war. Associated with this tasking was the requirement by the Director of Military Personnel Management (DMPM) to identify problems that occurred during the call-up process and assess the impact of the call-up on the IRR.

Method:

A 31-item, multiple-choice questionnaire was developed which contained items to determine attitudes toward the call-up and identify areas of concern relating to the call-up. In addition, three existing data bases were used to provide data on several background variables. Responses to the questionnaire were received from 3051 IRR soldiers at seven locations. Over half of these respondents provided one or more written comments expressing their attitudes and concerns.

Results:

The majority of IRR call-ups had a negative attitude toward being called up. In addition, they were dissatisfied with the way in-processing was conducted. They complained about disorganization, long lines, lack of information, improper treatment, inappropriate training, incorrect or missing records and files, and finance problems. Other concerns were related to the disruption of their lives and its impact on their jobs, income, schooling, and families.

Resource Investment:

Four person-months.

Final Application:

ARI Research Report #1594, documenting this research, was published. This report as well as briefings of the findings and recommendations have been provided to the DMPM and the DCSPER and are currently being provided to other relevant groups in the Army. It is expected that the findings will provide input for the development of manpower policies and plans for future mobilizations.

Check definition of SINCGARS:

1. Need

The ARI Fort Gordon Field Unit was requested by the Commanding General of the Signal Corps to provide input into the production of a paper based job aid to support Single Channel Ground to Air Radio System (SINCGARS) operation. The request was formulated because Desert Storm troops had difficulty in operating the radio and because the Commanding General was impressed by a job aid developed by ARI Fort Gordon that supports Mobile Subscriber Radio-telephone Terminal (MSRT) operations.

2. Approach & Method

MAJ Smith, Dr. Legree, Dr. Gillis, and Ms. Plummer consulted with Signal Corps personnel to help ensure the content validity of the job aid and to collect pilot data.

3. Results

Minor modifications were implemented to the SINCGARS job aid and the data supported the decision to field the job aid.

4. Resources Invested

The Field Unit's investment in the project was minimal but drew heavily on the experiences encountered through the production and validation of the MSRT job aid.

5. Final Applications

The Signal Corps subsequently published and distributed the SINCGARS job aid to Desert Storm troops.

13 August 1991

From: Dr. Howse
To: LTC St. Clair
Subj: ARI ODS Summary Report

I. Need and Objective: Class A aviation accidents involving NVG operations occurring in the early stages of ODS resulted in imposition of a 500 ft altitude floor for all flight operations. Request for support was received from US Army Safety Center to rapidly develop new guidelines for minimum altitudes and maximum airspeeds for NVG flight operations specific to SW Asia desert environments, in cooperation with USASC, USAAVNC, and C^2NVEO.

II. Approach: ARIARDA provided expertise in NVG training, experimental design, and analysis. A field team assembled from the four agencies, with the ARIARDA representative acting as Technical Manager, pretested procedures and instrumentation at Ft. Belvoir, then deployed to Saudi Arabia where in-flight observations were made simultaneously with video taped NVG imagery which were correlated and analyzed for stress, workload and aircrew confidence to produce estimates of limits for the parameters. Observations were made with light levels from zero through 90% moon illumination in three terrain types; scrub, dry lake bed, and sand dunes. In addition, several concurrent subtests established recommendations for crew coordination and visual scanning techniques, external aircraft lighting, IR searchlight use, and a demonstration of the Terrain Perception Enhancement Kit.

III. Results: Graphic planning guides for airspeed and altitude, recommendations for coordination/scanning, IR light use, and aircraft lighting were produced in Saudi Arabia, along with a brief training video, and were distributed immediately. After briefing the chain of command, the recommendations were accepted and the altitude restriction was removed approximately one month before the first Army Aviation involvement in Operation Desert Storm. The compiled results have been published as Aviation NVG Desert Training and Operations Planning Guide, Appendix E to TC 1-204. In addition, the results have been incorporated into the Lesson Plan and Student Handouts for NVG Operations training at USAAVNC.

IV. Resource Investment: Cost to ARIARDA were limited to approximately 480 hours and approximately $2400 in travel.

V. Final Application: The request for support was fulfilled and the objectives of the project were accomplished. Feedback from aircrews and commanders returning from ODS indicate that the materials provided were well received and useful both in training Aviators before fighting began, and in planning missions during the conflict.

I. NEED AND OBJECTIVE: CALL, CAC-T was tasked to collect lesson learned on the mobilization of the Reserve Forces as part of DESERT SHIELD. ARI-POM was requested to provide Technical Advisory Services to the CALL Task Force in the development of content, instruments and methodology.

II. APPROACH: ARI-POM personnel and an ARI-Boise representative met at CAC-T to develop a plan to assist CAC-T. An approach was agreed to include areas of responsibility. ARI assumed the responsibility to provide data items, instruments, and methodology to obtain information on Combat Service Support Reserve Components and provide draft materials to CAC-T for review and approval. In addition, ARI agreed to review all instruments and provide draft formats to CAC-T for their approval. The prior research done by ARI-POM/CAC-T, in conjunction with the Logistic Center, plus the Determinants Research provided the basis for the development of draft materials. Also, the ARI staff using materials provided by CAC-T developed data collection forms, and evaluation plan summary sheets for Combat Service Support.

III. RESULTS: Evaluation Summary sheets were developed for the areas of logistics and administration: Family Services, chaplains, intelligence/security, non-deployable personnel, morale support activities, personnel qualification, unit roster, records, unit strength and personnel accountability, personnel processing, mobilization cross-leveling system, finance, mobilization unit safety requirements, alcohol and drug abuse, medical, preparation for overseas movement (POM), logistic data files, alert, mobilization at Home Station, mobilization station, and NTC training of RC CSS units.

IV. RESOURCE INVESTMENT: Travel, approximately $1,500. Professional Personnel days: 15.

V. FINAL APPLICATION: The materials were incorporated by CALL in their data collection of mobilization of RC CSS units.

SUBJECT: ARI-POM DESERT SHIELD/STORM SUMMARY REPORT

I. REQUIREMENT/NEED: CALL, CAC-T, TRADOC requested summary information to provide to National Guard combat units on how they might best train to prepare for NTC.

II. APPROACH: A summary of findings based upon the "Determinants" research was developed and submitted to CAC-T per their request.

III. RESULTS: The compilation or summary of actions that could be taken by NG units to prepare for NTC consisted of eleven edicts (see attachment).

IV. RESOURCE INVESTMENT: Two personnel days.

V. FINAL APPLICATION: The information was provided to both CAC-T and to DCST, TRADOC. We were informed this information was incorporated into a package of information that was provided to the NG.

ENLISTMENT PLANS UNDER THREAT OF WAR: THE IMPACT OF OPERATION DESERT SHIELD/STORM

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ENLISTMENT PLANS UNDER THREAT OF WAR: THE IMPACT OF OPERATION DESERT SHIELD/STORM

INTRODUCTION

The advent of the All Volunteer Force (AVF) in 1973 served to focus attention on the expressed intentions (or propensity) of youth to serve in the military. In the absence of a draft, the military services must rely upon volunteers to meet their enlistment needs. Not until the 1980s, however, has the tracking of youth attitudes and the relationship of attitudes to behavior been of much importance to the military. There are three findings that account for this increased attention: (1) enlistment intentions of youth, if correctly measured, are good indicators of subsequent behavior (Orvis, 1982; Orvis and Gahart, 1985; Nord and Weiland, 1985; and Nord, Schmitz and Weiland, 1986); (2) shifts in intentions result in changes in enlistment behavior or shifts in intentions are one important determinant of enlistment behavior (Nord, Schmitz and Weiland, 1986); (3) tracking intentions as a predictor of subsequent behavior should focus on the most easily trained youth (or "prime" recruiting market) highly sought by the military services.

Why is youth propensity to enlist an important area of research? After all, it is actual behavior with which we are most concerned and not mere intentions. Research has, however, demonstrated that enlistment intentions are strong predictors of enlistment behavior. Surveys of youth can thus be used to project characteristics of who will enlist, given various

incentives, socioeconomic conditions, and enlistment criteria. While demographic, attitudinal and economic variables influencing the enlistment decision have been well documented (c.f., Orvis and Gahart, 1985), the impact of cohort effects, such as political events and wars, have received little attention. This paper represents a first look at the impact on enlistment intentions of a massive military mobilization, followed by a relatively brief war in which the U.S. was victorious. Data from before, during and after Operation Desert Shield/Storm, are analyzed to see if enlistment intentions of youth change significantly during this period.

One previous study did attempt to measure changes in enlistment intentions before and after the brief conflict in Grenada and the bombing of the Marine barracks in Lebanon (Defense Manpower Data Center, 1983). Both of these events occurred within days of each other and, quite coincidentally, both occurred during the Fall 1983 administration of the Youth Attitude Tracking Survey (YATS), a DOD-sponsored survey youth attitude toward advertising and enlistment.. It so happened that a portion of the sample was interviewed prior to these events and a portion after the events concluded. While comparisons of these two groups showed no significant change in enlistment intentions, a subsample of youth who were interviewed before and then re-interviewed after the incidents of October 1983 showed significant increases in propensity to enlist (DMDC, 1983).

Given the lengthier time frame of Operation Desert Shield/Storm[1], as compared to events in Grenada, one would expect more significant changes in intentions. Bachman et al. (1987) have found that one's attitude toward the use of military power might be a determinant of enlistment intentions. They demonstrate that measures of political conservatism (on a continuum going from "hawk" to "dove") are similarly distributed among high school students and military personnel. They argue that youth self-select military service based on the degree of pro-military values. If this is the case then we can expect to find that youth with more nationalistic or pro-military values have higher enlistment propensities.

MODELING THE ENLISTMENT DECISION

Nord, et al. (1986) have modeled propensity and its influence on enlistment behavior as a systems model shown below. (See Figure 1.)

[FIGURE 1 ABOUT HERE]

However, they also found that changes in propensity and other variables are important predictors of actual enlistment behavior. (See Figure 2)

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[1] Operation Desert Shield refers to the period 2 August 1990 to 17 January 1991. Operation Desert Storm refers to the 6-week period beginning 17 January 1991 and when offensive operations ceased on 28 February 1991.

[FIGURE 2 ABOUT HERE]

This suggests that changes in one's perception of risk or bodily harm, would yield changes in enlistment propensity and would thus affect actual enlistment behavior. Therefore, we suggest the following model of enlistment behavior. "Change in risk status" refers to situations such as the large-scale mobilization that occurred for Operation Desert Shield. During this period a number of conditions would heighten perceptions of personal risk:

[FIGURE 3 ABOUT HERE]

a lengthy build-up with the massive mobilization including the first large scale call-up of reservists since World War II; the imminence of war; gloomy predictions of numerous American casualties; and reports of the considerable combat experience of Iraqi troops. Given such conditions it would not be surprising to find a decline in the propensity of youth to enter the military.

THE DATA

Enlistment intentions of youth before Operation Desert Shield come from three survey instruments. One is the 1990 Survey of High School Youth (Setlow et al., 1990). Approximately 10,000 high school juniors and seniors from 460 schools throughout the 48 contiguous states were given survey booklets to complete in their classrooms. The survey was given between March 27 and June 15, 1990 preceding the invasion of Kuwait by Iraq by

less than two months.

Other pre-Desert Shield data came from the Monitoring the Future project, an annual survey of some 16,000 high school seniors. We will present some aggregate propensity measures for the years 1976 - 1990. Further, we did not have access to the actual data tapes and had to rely on published reports and unpublished computer runs that were made available to us.[2] As a result, analysis of these data are limited to a single survey question. These data were collected in the Spring of each year from 1976 to 1990.

A third source of pre-Operation Desert Shield data was the Fall 1989 administration of the Youth Attitude Tracking Survey (YATS). These data were collected between 28 August to 10 November 1989. The survey includes data from some 10,000 16 to 24 year-olds in the 48 contiguous states.

The 1990 YATS data were collected from 13 December 1990 until 7 February 1991, so this comprises our Operation Desert Shield/Storm data base. The sample contains about 10,000 respondents ages 16 to 24 living in the 50 states. Though changes were made in the sampling time frame between the 1989 and 1990 YATS, they can be made comparable through the use of an adjusted weight variable on the 1990 YATS. We have used this weight so the results from our analyses of the 1989 and 1990 data

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[2] The authors wish to thank Professor David Segal who so generously provided us with the computer output.

can be compared.

The Harris/Scholastic Youth Poll is a survey of some 1,400 youth in grades 3 to 12 which occurred during Operation Desert Storm. The data are representative of students aged 8 to 18.

The post-Operation Desert Storm data comes from an annual survey of 1,000 16 to 21 year-old males conducted by the Navy. The survey, referred to as the 1991 Navy Advertising Effectiveness Study (NAES), was fielded beginning 15 March 1991 and ending 8 April 1991. Though we did not have the actual data set for analysis, the report was generously provided by the staff at the U.S. Navy Recruiting Command. (See Figure 4.)

[FIGURE 4 ABOUT HERE]

Finally, data on attitudes of youth towards the war in Southwest Asia are presented from the Harris/Scholastic Youth Poll. Though this survey did not include questions on enlistment intentions, it has a number of questions concerning attitudes toward the war and was administered to about 1,400 students in grades 3 to 12 between 31 January to 7 February 1991. Though we consider results from each of these data sources we focus our analyses on the two truly comparable data sets that were available to us on magnetic tape; YATS 1989 and 1990.

LIMITATIONS OF THE RESEARCH

To measure changes in enlistment intentions during a period in which war threatens or actually occurs, multiple measures over

time from the same individuals are required. Barring such longitudinal data, analysis of different survey data which are representative of the same populations would suffice. Unfortunately, neither of these conditions was met. To get around this problem we split the 1990 YATS sample into two groups, those interviewed during Desert Shield and those interviewed during Desert Storm. We have also considered data from several cross-sectional surveys, though each has a different sampling time frame.

A further problem is research has shown that economic conditions influence youth enlistment intentions (Dale, Gilroy, 1984). From September 1989 when data collection began for the 1989 Youth Attitude Tracking Survey to April 1991 when data collection concluded for the Navy Advertising Effectiveness Study (NAES) youth unemployment changed significantly. Because our research is a preliminary examination of enlistment intentions over time and does not include multivariate models we have not controlled for these changes.

Finally, it should be pointed out that the wording of questions used to measure enlistment intentions sometimes vary across surveys. While we recognize all of the above as problematic, the importance of addressing the question "How do youth enlistment intentions change during a period of increasing threat?" more than justifies proceeding with this task. However, to minimize the inconsistencies of this sort, we have focused our analyses on two data sets that are comparable with regard to

sample and question construction.

HYPOTHESES

Following our review of the literature we posit the following hypotheses:

1) Youth with strong pro-military beliefs will express an increased likelihood to enlist in the military following the start of Operation Desert Storm.

2) Youth with negative propensity (those stating they definitely or probably won't enlist) will become more emphatically against enlisting in the military.

(3) The null hypothesis is that there is no change in the enlistment intentions of youth before and during Operation Desert Storm.

RESULTS

This paper examines whether the enlistment intentions of youth changed as a result of Operation Desert Storm. The Youth Attitude Tracking Survey (YATS), which was in the field during Operation Desert Shield and for three weeks following the start of Operation Desert Storm, provides us with an opportunity to examine this issue. Based on the date interviewed, respondents were divided into two groups -- those interviewed before the onset of Operation Desert Storm (but during Operation Desert Shield), referred to as "before Storm," and those interviewed after the start of Desert Storm, referred to as "during Storm."

To ensure that the subsamples were comparable, we checked the distribution of each by race, region of residence and age and found no significant differences. However, due to the small subsamples for some groups, we have combined blacks, Hispanics and "others[3]" into a single group labeled "minority" which we compare with whites. For analysis of the entire YATS sample (i.e., I-IIIA males), we find we have sufficient sample to present data for more detailed race/ethnic groups (i.e., whites, blacks and Hispanics).

Results suggest that some changes did occur following the onset of Operation Desert Storm. Most notably there were changes in expressed motivations for enlisting in the military. It was also noted that respondents with negative propensity became more emphatic in their responses. That is, while there were no significant changes in positive and negative propensity before and during Desert Storm, among those with negative propensity there was a shift from "probably not" to "definitely not" after the war began.

In this section we present results on youth enlistment intentions (or propensity to enlist), their motivations for enlisting, the military service and branch which they prefer, and length of time before they actually enlist. Results presented here focus only on males in test score categories I-IIIA, the services' "prime" recruiting market.

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[3]"Other" includes Asians and Pacific Islanders as well as Native Americans.

Enlistment Intentions

Taking the entire 1990 YATS sample together we can see that blacks have higher unaided[4] and aided propensities than other groups. (See Table 1.) Splitting the sample into those

TABLE 1 ABOUT HERE

interviewed before and during Operation Desert Storm, we can see that minorities have higher aided enlistment propensities, but their unaided propensities are no different than whites. (See Table 2.) The fact that blacks have higher propensity than whites is quite clear when we examine the *Monitoring the Future* Data (collected from high school seniors). For each year from 1976 to 1990 blacks have significantly higher aided propensity. For the years 1989 and 1990 the propensity gap between blacks and whites is even greater than that between males and females. Apparently blacks have far higher unaided propensity than Hispanics but when the two groups are combined these differences are masked.

TABLE 2 ABOUT HERE

Because the sample is heavily skewed toward whites (due to their representation in the population as a whole and in test

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[4]Because YATS is a telephone survey the interviewer can pose an open-ended question about one's future plans. If the youth mentions that his plans include joining the military, then he has "unaided positive propensity." Aided propensity refers to the youth's response when specifically asked "How likely is it that you will be serving in the military in the next few years?" If he respond "Definitely Will Enlist" or "Probably Will Enlist" we say he has positive (aided) propensity.

score categories I-IIIA), propensity for the total sample is similar to the percentages for whites. Hence, as shown in Table 3, there is no change in the percentage of youth with positive

TABLE 3 ABOUT HERE

(aided) propensity before or during Desert Storm. However, when we examine the responses on a four-point scale, from "definitely will enlist" to "definitely will not enlist," there is a slight but significant change in the percentage reporting "definitely not" and "probably not" with the shift in attitudes becoming more negative. (See Table 4.) So while overall proportions having

TABLE 4 ABOUT HERE

positive or negative propensity before and during Desert Storm did not change, males in test score categories (TSC) I-IIIA appeared to have become more emphatic in their negative responses.

It is not surprising to find that minorities have higher aided propensity measures both before and after the start of Desert Storm than do whites, since this finding is common to numerous surveys. It is, however, surprising to find that their propensity increased following the start of Operation Desert Storm as this occurred during a time when the press and national polls were reporting declining support among blacks for U.S. involvement in Southwest Asia. Indeed, the Harris/Scholastic Youth Poll which surveyed students during the week of 31 January - 7 February 1991, found black students had the lowest support for the war (28% supported the war as compared to 59%

among whites and 53% among Hispanics). Black students also reported feeling least proud of U.S. involvement in the war (39% of black youth reported feeling proud as compared to 68% of white students and 59% of Hispanic students).

Finally, when we examine propensity by political outlook, what Bachman et al. (1987) refer to as those with "hawkish" views compared to those with "dovish" views, there is also a difference in propensity. Political outlook was determined by the question "Do you think the U.S. ought to have much more military power than any other nation in the world? Would you say you...[5]

Response	Political Outlook
Strongly Agree	Hawk/Conservative
Mostly Agree	Moderate
Neither Mostly Disagree Strongly Disagree	Dove/Liberal

As expected, propensity is higher for those with more conservative views.

In the aftermath of Desert Storm the Navy's Advertising Effectiveness Study (NAES) reports a significant increase in those reporting moderate aided propensity. Comparing data from the Spring 1990 NAES (before Desert Shield) to the Spring 1991 NAES (after Desert Storm) those youth saying they were "somewhat interested in military service" increased from 27% to 31%. This

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[5]Groupings were designed to distribute the sample into groups of relatively equal size. Roughly 1/3 of the sample belongs to each of the three categories.

suggests that youth who became more emphatically against serving in the military during Desert Storm may have altered their views within a short period following conclusion of the war.

Service and Branch of Service Preferred

There were surprising and dramatic shifts in the service preferred before and during Desert Storm. The Air Force, Navy and Coast Guard experienced the greatest declines in the percentage naming them as their service of choice. As shown in

FIGURE 5 ABOUT HERE

Figure 5, the Marine Corps gained the greatest percentage as the service of choice, but the Army also gained. Similar results were found for those with unaided and aided positive propensities, though declines in the percentage choosing the Air Force and Navy are less dramatic when aided propensity is considered. (See Figure 6.) Also, as shown in Table 5 there are significant differences by race.

FIGURE 6 ABOUT HERE

TABLE 5 ABOUT HERE

These results are surprising given that the living conditions of sailors in Southwest Asia would seem preferable to those of soldiers or Marines. Perhaps the televised display of Air Force prisoners of war or the news of lost planes was enough to sway many I-IIIA males against the Air Force, the usual service of choice.

The service specific preferences of 1990 YATS respondents is far different from the distribution of 11th and 12th grade respondents in the Spring 1990 Survey of High School Youth. In this survey the Air Force was preferred by 34% of youth, the Army and Navy were tied with 14% each, and the Marines attracted 11% (27% of youth were undecided). Preferences such as these are fairly typical to youth surveys and are what we expected to find in the "During Storm" subsample. Surprisingly, our findings were far different.

Our findings also differ from the Post-Desert Storm NAES survey. While the Navy survey reported a significant decline of 5% in preference for the Air Force between Spring 1990 and Spring 1991, they report a 7% increase for the Navy. This issue of service preference is an important one and deserves further examination.

Results for propensity by branch of service (i.e., active duty, Reserve or National Guard) also ran counter to expectations. We expected to find reduced propensity for reserve service during Desert Storm. In fact, there was no decline in interest. Perhaps there was no decline because Reserves were activated at the start of Operation Desert Shield in August 1990, so any declines could be seen only by comparing data for 1989 and 1990. In fact, there was no such change for I-IIIA males in reserve propensity between 1989 and 1990.

The propensity for the Guard, which is low to begin with, declined following the start of Desert Storm. Those few who did

express a propensity for the National Guard shifted from the Army toward the Air National Guard following the onset of Desert Storm. Like the Reserve, the National Guard maintained roughly the same (aided) propensity between 1989 and 1990 (though the percentage of blacks expressing interest in the Guard increased from 16% in 1989 to 22% in 1990.)

When we examine branch of service by political outlook we find that unaided propensity for the Guard declines following the start of Desert Storm for conservatives, moderates and liberals, that unaided propensity for active duty increased for moderates and liberals following Desert Storm, and unaided propensity for the Reserves increased significantly for conservatives during Desert Storm.

Length of Time Before Enlisting

One question on YATS asks "If you were to join the military service, how soon do you think you would join?" (This was asked of youth reporting positive aided propensity.) The response categories range from "within 6 months" to "more than 2 years." While it appears that there was no significant change for whites before or after Desert Storm, minority males did report divergent time periods for enlisting depending on the date they were interviewed. Minority I-IIIA males who were most committed to joining the military (i.e., who said they will "definitely" join the military when asked) report that they will join sooner when interviewed after the start of Desert Storm. While 21% of these highly committed youth said they would enlist within one year

before Desert Storm, 42% said they would enlist within one year after the war began. Those minority males reporting moderate interest in joining (i.e., who said they would "probably" enlist in the military) show a lengthier time period in which they'll join following the onset of Desert Storm. If this is borne out by actual behavior, then military enlistments should decline following the conclusion of Operation Desert Storm and for some period into the future.

Enlistment Motivations

While the Youth Attitude Tracking Survey includes questions about a variety of enlistment motivations, we have focussed on only three which relate directly to the change in risk status which occurs during war or which measure "patriotic" values. These were the motivators we assumed would be most affected by going to war. The three motivations are shown below:

(1) "The main reason I would not consider enlisting in the military service..." with a reply being "threat to life." "What are the main reasons you would consider joining the military?" Among the possible replies are:

(2) National Defense

(3) Duty/Obligation

The perception that military service involves a threat to life is certainly a deterrent to enlistment. We assumed that following the start of the war the proportion of youth expressing this as a concern would increase. And it did, but only slightly, going from 17% during Desert Shield to 20% during Desert Storm.

When we examine this concern by race groups we see that minorities report a significantly higher concern about threat to life than do whites. (See Table 7.) Similar results are also found in the Harris/Scholastic Youth Poll. 46% of black students indicated being scared about how the war will affect them personally, while only 40% of whites and 53% of Hispanics shared this concern. However, black respondents were more likely to have relative in the military so they had a greater personal connection to events occurring in Southwest Asia. (61% of black respondents state they had a relative in the military, compared to 44% for whites and 51% for Hispanics.)

TABLE 7 ABOUT HERE

When we examine the percent reporting threat to life as a reason not to enlist by political outlook, it is surprising to find that it rises significantly and dramatically for the most conservative youth, from 15% to 28%, following the start of Desert Storm. It is hard to say how meaningful this is since the percentage of youth falling into the conservative category increased following the start of the war, making that group a far less "select" group than it had been.

Males in the upper half of the test score distribution do not often report national defense as a reason to enlist, and this was true both before and after the start of Operation Desert Storm.

Duty to country is a motivation to enlist that is more commonly expressed than national defense, and there was an

increase in this following the start of the war (going from about 24% to 30%). Hence, it appears that while Operation Desert Storm didn't motivate more I-IIIA males to join, it did change the motivating factors somewhat. Upon reflection this makes sense. Youth would be more likely to consider service to country a duty during a time of perceived threat or need, such as that posed by Desert Storm.

When we examine this factor, duty/obligation, by political outlook, there is not much change before and after the start of Desert Storm. However, among the most conservative youth the proportion mentioning duty to country as a motivation rose from 26% before to 40% after.

CONCLUSIONS AND RECOMMENDATIONS

There is no overall significant change in enlistment intentions before and during Operation Desert Storm as measured by the 1990 YATS. Aided positive propensity increased slightly to 17.8% from 17.4% during combat operations. The length of the war, at the time of the survey approximately 3 weeks, and the initial success registered in the public media possibly ameliorated the expected decrease in positive propensity to enlist.

Youth who expressed strong pro-military beliefs as indicated by definitely and probably responses to the propensity question (17% Before Storm) changed little during the combat operations (18%). However, the negative propensity for youth increased (as measured by responses of definitely not) 4 percentage points from 39% to 43%. This increase appears to confirm the hypothesis that those youth with negative propensity will become more emphatic in their attitude to not enlist. The rate of increase in negative propensity, however, may have been tempered by apparent combat successes which saturated the public media. The negative propensity may, in fact, rebound after sufficient time passes if the results of the NAES Spring 1991 survey are accurate. Conservative youth who strongly agree with the need for more military power for the U.S. display little change to their level of positive propensity.

Disaggregating the overall propensity results by race/ethnic

components shows minorities have higher aided and unaided positive propensity before and during Operation Desert Storm compared to whites. Aided positive propensity increased 9 percentage points for minorities and decreased 1 percentage point for white respondents.

There were significant changes in service preferences before and during Operation Desert Storm. Unaided positive propensity drops of 30 percentage points for the Air force and Navy may reflect the adverse impact of the media coverage of the war in Southwest Asia on the youth's fragile attitudes toward enlistment. Perhaps activities, such as downed allied aircraft and Iraq's public exploitation of American POWs (notably Air Force and Navy pilots) undermined the usual favorable propensity toward the Air Force and the Navy. The Army and Marine Corps public images at the time of the survey, although somewhat harsh with nightly visions of difficult living conditions, did not initially show the most damaging aspects of ground combat operations. Aided positive propensity results also reflect similar by-service propensity changes but with smaller before and during differences than the unaided results.

Expressed concerns about the impact of Operation Desert Shield/Storm on propensity of youth to enlist in the Army Reserves appears to be unwarranted. There was no change in reserve propensity for Male I-IIIA between 1989 and 1990.

The results of the questions concerning the length of time before enlistment was surprising in that white males had no

significant change in their projected timing of enlistment. The "definitely" committed minorities, however, indicated twice the interest in enlistment within one year after the start of Desert Storm versus before Desert Storm. The recruiting policy implications of changes to the enlistment timing of youth is important and requires further analysis. Incentives and enlistment options may have to be enhanced to provide an offset for any lengthening in the enlistment timing of youth during any future conflicts.

The components of enlistment motivation changed somewhat during Operation Desert Storm. The increase in the "duty to country" component was an expected result and in numerous instances was corroborated by the increased written requests for enlistment received by the Army in which youth mentioned duty to country as the motivating factor.

Overall, results of this analysis have shown that the total propensity to enlist may not be greatly affected by the onset of war. However, the breakdown by race/ethnic category, the components of enlistment motivation, the branch of service preferences, and enlistment timing vary considerably beneath the surface of this unchanged overall propensity.

Additional research needs to examine why there were such significant changes in branch of service preferences before and during Operation Desert Storm. For instance, what actual media incidents caused such a significant decline in Air Force propensity and a concomitant increase in Army propensity? A

further examination of youth's political attitudes and the effect on propensity is warranted. The influence of demographic factors on propensity such as race/ethnic background, socio-economic status, and gender are also appropriate for examination. Finally, another important variable to examine is the prevailing unemployment which has consistently played a major role in the enlistment decision of youth.

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FIGURE 4. SURVEYS OF CIVILIAN YOUTH

Pre-Desert Shield	Desert Shield	Desert Storm	Post-Desert Storm
1990 Survey of High School Youth (N=10,000) 27 Mar - 15 Jun 90	1990 Youth Attitude Tracking Survey (YATS) (N=10,000) 13 Dec 90 - 7 Feb 91		Navy Advertising Effectiveness Study (N=1,000) 15 Mar - 8 Apr 91
Navy Advertising Effectiveness Study (N=1,000) Spring 1990		Harris/Scholastic Youth Poll (N=1,000) 31 Jan - 7 Feb 91	
Monitoring the Future (N=16,000/yr) 1976-1990 Spring Term			
1989 Youth Attitude Tracking Survey (N=10,000) 28 Aug - 10 Nov 89			

TABLE 1. Positive Propensity by Race/Ethnicity, I-IIIA Males

(%)

	WHITE	BLACK	HISPANIC
Unaided, positive	6%	11	5
Aided, positive	16	30	27

TABLE 2. Positive Propensity Before & During Desert Storm by Race/Ethnicity, I-IIIA Males

(%)

	WHITE	MINORITY
UNAIDED		
Before Storm	7%	8
During Storm	4	7
AIDED		
Before Storm	16	25
During Storm	15	34

TABLE 3. Aided Propensity Before & During Desert Storm, I-IIIA Males

(%)

	POSITIVE PROPENSITY	NEGATIVE PROPENSITY
Before Storm	17.4%	82.6
During Storm	17.8	82.2

TABLE 4. Aided Propensity Before & During Desert Storm, I-IIIA Males

(%)

	DEFINITELY	PROBABLY	PROBABLY NOT	DEFINITELY NOT
Before Storm	4%	13	42	39
During Storm	3	15	38	43

TABLE 5. Preferred Service (Unaided Propensity) Before and During Desert Storm by Race, I-IIIA Males

(%)

	Air Force	Army	Coast Guard	Marine Corps	Navy	Don't Know
WHITE						
Before Storm	32%	17	3	18	25	5
During Storm	24	20	2	25	20	8
MINORITY						
Before Storm	33	18	4	12	33	1
During Storm	19	27	0	32	17	5

Note: Results are for those with unaided positive propensity.

TABLE 6. Preferred Service (Aided Propensity) Before and During Desert Storm by Race, I-IIIA Males

(%)

	Air Force	Army	Coast Guard	Marine Corps	Navy	Don't Know
WHITE						
Before Storm	27%	28	5	18	21	2
During Storm	27	33	3	20	17	1
MINORITY						
Before Storm	35	28	17	16	4	1
During Storm	22	31	4	25	17	1

Note: Results are for those with aided positive propensity.

TABLE 7. Selected Enlistment Motivations and Deterrents Before and During Desert Storm by Race, I-IIIA Males

(%)

	TOTAL		WHITE		MINORITY	
	Before Storm	During Storm	Before Storm	During Storm	Before Storm	During Storm
Threat to Life	17%	20	15	17	28	30
National Defense	5	7	4	7	6	7
Duty/Obligation	24	30	24	30	23	30

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Tab Eight

Systems Research Laboratory Programs

LESSONS LEARNED

AR 1 1-33, "Army Lessons Learned Program," tasks the Center for Army Lessons Learned (CALL) with collecting the lessons learned from both peacetime training exercises and wartime operations. To this end, CALL requested that the ARI Field Unit at Fort Leavenworth, Kansas, support the collection and analysis of information from Operation Desert Storm.

In the Fall of 1990, this task assumed vital importance, as CALL sent a message to elements throughout the Combined Arms Conmmand (CAC) and to all TRADOC centers and schools requesting nomination of issues to be examined in the event of ground operations. ARI Field Unit personnel reviewed the over 2000 issues and, in coordination with CALL, identified 113 critical issues to be addressed in interviews with unit conunanders. Since too few commanders could be interviewed, it was decided that data should be collected from all units, and ARI developed a survey form for distribution to all unit commanders - Company through Corps. At CALL's request, ARI modified and customized the survey for three groups: combat and combat support commanders, combat service support commanders, and staffs. The final forms include 42 questions for combat and combat support commanders, 42 similar questions for combat service support commanders, and 63 questions for staffs. All Battlefield Operating Systems and all phases of the operation are addressed in rating and short answer format.

Once the Commander approved the surrvey forms , CAC, 1 5 ,000 surveys were reproduced and taken to the Southwest Asian Theater by ARI and CALL personnel. Surrvey forms were delivered to all units and, to the extent feasible, completed surveys were collected from the units to be brought back to Fort Leavenworth for processing and analysis. CALL and ARI then conducted follow-up interviews to obtain additional information on issues which emerge from the survey responses. ARI provided additional support to CALL in processing and analyzing the survey data to develop "Lessons Learned. "

This report provides preliminary summaries and assessments of the responses to the surveys which were developed by the Center for Army Lessons Learned (CALL) and the Army Research Institute Field Unit at Fort Leavenworth (ARI) to investigate a range of command and control(C2) issues. Additional surveys are still being received and entered into the database, and additional analyses are required to examine some issues in more depth. However, this preliminary report serves to highlight some emerging findings and issues. The attached appendices provide detailed data and verbatim responses.

ARI and CALL jointly developed three questionnaires for distribution to personnel in Desert Storm units. One was designed for commanders of Combat and Combat Support units, a second for commanders of Combat Service Support units, and a third for Staff Personnel (see Attachments 1-3). The three versions of the questionnaire were intended to solicit opinions from a broad range of Army personnel on a variety of conunand and control issues, and were "customized" to focus on issues expected to be of more relevance to given groups.

ARI and CALL personnel distributed over 5,000 of the surveys in Saudi Arabia in April, 1991, and continued the distribution to units in CONUS through July, 1 99 1 . As the surveys were returned, they were entered into a database. Summaries and analyses cited in this report are based on all surveys (786) entered into the database as of 4 July, 1991. We have an estimated 250-300 additional surveys which have been received, and anticipate receiving 150-200 more

from the last two units we contacted.

The surveys examined to develop this report include those of 560 officers (50% captains, 23% majors), 135 NCOs (including 20 CSM) and 14 warrant officers. The majority of the respondents (66%) were from division or lower echelon units, with the remainder at corps or EAC; EAC personnel include personnel from Signal, FA, Medical, and other units at EAC who may in fact have been attached to, or in DS to, lower echelon combat units. Nine divisions or separate brigades are represented by the respondents at division level or lower, and 14 different EAC elements are represented.

The main body of the report contains a series of analyses of separate issues, with the order of these roughly corresponding to the order of the questions in the original questionnaires. In the case of questions which called for a rating, ranking, or Yes/No type of response, we provide a table summarizing the responses. We have also appended comments about the pattern of responses, the relationship of some of the responses to other questions, etc. Some rating-type questions provided the opportunity for respondents to add additional comments. We have examined those comments, and provide a summary with the basic table. The verbatim comments can be found in the appendices. In the case of the questions which called for a fill-in-the-blank type of response (where the blank was often several lines long) we have summarized those comments in the main body of the report, and reproduced the verbatim replies in the appendices. From their marginal notes, we know that this questionnaire was frustrating for many; they had a great deal to offer on topics we had not addressed. Despite such frustrations, the pressures of redeployment, the desire to become re-acquainted with family, and other factors, there were well over 100 commanders, from platoon through division, and well over 600 staff personnel, who took the time to reflect on their experience and provide us with their opinions, insights, and recommendations. From this large number of responses, there are many instances where a consensus is clear, and also many where strong differences of opinion need to be reconciled by further analysis.

NATIONAL TRAINING CENTER EFFECTIVENESS

ARI is also now working with CALL's "Desert Storm Special Projects Office"on investigation of the question "How did the National Training Center help prepare our soldiers for Operation Storm?" We have received approximakly 2500 survey returns. Data input is scheduled to be completed during October, with completion of this sub-report scheduled for early in the second quarter of FY92.

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Tab Nine

Training Research Laboratory Programs

INDIVIDUAL READY RESERVE (IRR) CALL-UP: SKILL DECAY

The Director of Military Personnel Management tasked ARI with determining the "extent of skill decay" in the IRR call-up for Operation Desert Storm and reporting the findings in early April 1991.

Accordingly, we budgeted for 18 person-months and let a $20K contract for data entry to accomplish our task. This includes our investment in the report "IRR Call-up: Attitudes, Motivation, and Concerns."

Reservists were identified and tracked through the Army Training Requirements and Resources System, and a questionnaire was developed and administered to those not yet deployed. Hands-on and written diagnostic test scores were gathered from mobilization stations, and an assessment was made of the conditions under which information was collected, in order to determine which tests yielded reliable data. From the data collected under suitable conditions, as well as information from other records, an integrated data base was formed and analyzed to determine the extent of decay for those MOSs with interpretable data. Certain results are already apparent. Among them are the following:

- Skill decay was evident in written diagnostic and certification tests and weapons qualifications scores.
- Skills assessed by written tests decayed the most within the first 6 months since separation; weapon qualification skills decayed the most after 10 months.
- SQT was the strongest predictor of skill and knowledge retention, followed by AFQT.
- Skill retention was higher for those who entered the IRR directly from active duty.
- Skill decay was higher in Armor and Combat Engineer CMFs, and lower in Infantry, Mechanical Maintenance, and Supply and Services CMFs, as determined from the questionnaire.
- Skill retention was better in CMFs that had better oppor- tunities for soldiers to use their MOS skill in civilian jobs.

The results of our analysis were briefed to the Senior Staff Council on September 10, 1991. We feel that the results can be applied to develop policies and plans for future mobilizations.

EFFECTS OF SUNLIGHT ON NIGHT VISION

During a literature search for a recently initiated research project on unaided night vision, some important research findings from the World War II era were uncovered. These findings indicated that prolonged exposure to strong sunlight can lead to a temporary deterioration in night vision of up to 50 % and that wearing dark sunglasses with less than 10 % visible light transmission can prevent this loss of night vi£ion, Due to the potential importance of these research findings for desert night operations, our objective was to expeditiously inform Army leaders of the problem and its solution.

An information paper describing the problem was written for Army leaders in August 1990. This information paper was widely disseminated throughout the Army, reaching the Chairman of the Joint Chiefs of Staff, the FORSCOM Commander, and the Center for Army Lessons Learned (CALL), ARI also encouraged the U.S. Army Medical Materiel Development Activity to lower the light transmission of the sunglass portion of the Ballistic-Laser Protective Spectacles (B-LPS), recently fielded to many armor and infantry units. Another solution to the problem, publicized in the January 1991 issue of the ARI Newsletter, involved the wearing of standard issue Sun, Wind, Dust goggles in combination with either civilian or military sun glasses.

As a result of our initiatives, Army leaders were effectively informed of the problem and its solution. The U.S. Army Medical Materiel Development Activity lowered the B-LPS light transmission standards in October 1990, in time for the manufacturer's next production run. ARI's resources expended consisted of only an estimated .25 professional staff years, expenditure of $316.35 for travel, and the expenses involved in publishing one issue of the ARI Newsletter.

All actions in direct support of Operation Desert Shield/ Desert Storm have been successfully completed, but research in other areas of unaided night vision continues. Planned research areas include investigating the effects of prolonged dark adaptation on night vision (e.g., illumination thresholds, peripheral acuity, movement detection), the effects of sunlight attenuation on subsequent dark adaptation, and the effects of practice on night visual performance, During the fourth quarter of FY91, an exportable unaided night vision training package recently developed for naval aviators will be explored to determine its suitability for use in infantry training.

ARI DESERT SHIELD/DESERT STORM SUMMARY REPORT: COMBAT LEADERS' GUIDE

Beginning in mid-August 1990, the Fort Benning Field Unit began to receive urgent requests for copies of the Combat Leaders' Guide (CLG) from units starting to deploy as part of Operation Desert Shield/ Desert Storm. Requests arrived from the 197th Infantry Brigade (Mech) (Fort Benning) and from the 24th Infantry Division (Mech) (Fort Stewart) and were followed by similar requests from the lst Infantry Division (Mech) (Fort Riley), the 48th Infantry Bde (Mech) Georgia Army National Guard, and the 155th Infantry Bde (Mech) Mississippi National Guard, as these units anticipated deployment. Shortly thereafter, further requests for CLGs were received from the 12th Cavalry Regiment (Fort Knox) to support their training of Individual Ready Reserve soldier, and from the 411 MP Company from Fort Hood, already in Saudi Arabia.

Over 600 copies of the CLG were provided from the existing supply to support the previously noted requests. Several hundred more were distributed in small numbers as requests were received from other units and from individuals. Since the CLG (a pocket size, waterproof job performance aid for use during periods of high stress and fatigue, either in continuous combat, or in realistic combat training) was in extremely limited supply, the Director of ARI's Training Research Laboratory requested that an updated version be developed to meet the needs of, and based on feedback from, desert operations.

As a result, a usage survey was developed and administered to personnel from the 24th ID, the Mississippi and Georgia National Guards, and both Observer Controllers and the OPFOR (1/52 Infantry (Mech)) from the National Training Center, to help serve as field validation/verification of the CLG. Extensive interviews of small groups and individuals from these units were also conducted. The original CLG product, the Combat Leaders' Guide: Platoon Leaders, Platoon Sergeants, and Squad Leaders was rewritten based on this feedback. Twenty four thousand dollars was forwarded from HQ, TRL to cover the cost of printing a new CLG. Expenses incurred time included 1/3 professional staff year (PSY) for one Research Psychologist, GS 13, and 1/12 PSY of secretarial Support, as well as the costs of travel and TDY to the National Training Center and Fort Stewart, transportation and postage fees associated with distribution of the CLG, and the expenses associated with survey construction and administration and the CLG rewrite.

The newly completed Combat Leaders' Guide: Leader Handbook is at the Government Printing Office, awaiting bids. (CURRENT STATUS?)An estimated 3200 copies will be available for distribution by the end of the fiscal year.(FY92?) The CLG meets a soldier need, and offers the potential to increase operational capability by insuring maintenance of leader readiness.

INTELLIGENT TUTOR FOR ARABIC MILITARY INTELLIGENCE LINGUISTS

Due to a shortage of instructors, and limited second language exposure in the field, MI linguists tend to lose their language skill after graduating from the Defense Language Institute (DLI). To maintain the skill of Arabic linguists, and to focus training on MOSspecific languages, the ARI designed an extension of an intelligent language tutor for 97E from German to Arabic.

First, a needs analysis was conducted through discussion with DLI, in order to identify the kinds of linguistic errors prevalent among Arabic graduates. A grammar for Arabic was codified by setting parameters on universal parsing principles deployed in the German parser. Error handlers were designed to identify major classes of syntactic errors in Arabic. A modification of DLI's standard phonetic transcription method was developed in order to mediate between student and parser. Multi-window lesson shells were designed to apply the tutoring rules developed for German to a Desert Storm scenario centered on territory in Kuwait. A voice output facility was made accessible from any point or window in the lesson. Script representing Modern Standard Arabic was used to present text; the voiced portions of the lesson were recorded by a speaker of Iraqi dialect. A voice input facility was installed using speech recognition technology being developed by TRADOC.

As a result of ARI's effort, a prototype Arabic lesson was demonstrated in July 91 which incorporated text presentations in Arabic script, voice output by a speaker of Iraqi Arabic, listening and reading comprehension exercises using manipulations of a geographical map, and production exercises invoking grammatical knowledge. The design specifications for a syntactic parser and lexical representations were presented in July 91.

A demonstration of the Arabic parser is scheduled for November 91, to be integrated with the tutor, thus permitting analysis of free-form Arabic sentences input by students.

Finalization of the Arabic tutor will continue through June 92, to ensure that errors of sentence construction are adequately detected and diagnosed. The findings on the degree of extendibility of the parser from German to Arabic, to be reported in November 91, can be applied to developing tutors in any language.

AN INITIAL ASSESSMENT OF THE FLYING CARPET(FC) SYSTEM

As part of "Project Odin," the Defense Advanced Research Projects Agency and the Institute for Defense Analyses (IDA) developed the prototype Flying Carpet (FC) system to help Desert Shield tactical commanders plan and prepare for future battles. This system integrated combined arms simulation and other technologies to display a simulated Middle Eastern battleground with static force displays. The Armor School conducted an initial assessment of the FC during January 1991, with the objective of identifying potential system applications and refinements needed. Army Research Institute (ARI) personnel developed a draft commander's guide for use of the FC system and assisted in the initial assessment, at the request of Armor School and IDA representatives.

ARI personnel developed a draft commander's guide based on available descriptions of projected FC capabilities. They also monitored the five-day division-level FC assessment, developed a questionnaire and administered it daily, and participated in daily and final after action reviews (AARs) conducted by Armor School personnel. ARI Technical Advisory Service was provided for a total of 1340 professional staff hours.

The assessment determined that the FC was not ready to be deployed to support Operation Desert Storm, since some projected system capabilities were not yet available. ARI questionnaire results and observations identified numerous system refinements needed, as well as several potential uses for the FC. These have been documented in a draft Research Report that includes the draft commander's guide. An ARI representative also provided the initial suggestion that the FC system be used to recreate and replay Desert Storm battles.

ARI support of the initial FC assessment was completed as requested by Armor School and IDA representatives, and the results are being used to refine the FC system. The suggested application of the system to re-create battles is being implemented in a major ongoing project to re-create the Battle of 73 Easting. ARI personnel are monitoring this effort to determine possible future involvement. Continued ARI involvement has been invited by a senior IDA representative.

RAPID TRAIN-UP PACKAGE (RTJP) FOR TANK GUNNERY

During the initial phase of mobilization, Reserve Component (RC) units are expected to deploy rapidly, but such units have unique training problems that make it difficult to maintain a high state of combat readiness. Rapid and efficient training is thus required to make the transition from current to combat levels of proficiency.

Previous surveys had indicated that the most efficient approach was to provide "opportunity" training of individual skills and knowledge, while utilizing available scheduled training periods for collective training. For a number of reasons, however, "opportunity" training could only be effective if tailored training materials were provided. The Army Research Institute Field Unit at Fort Knox had developed and tried a number of different training formats and materials to support NCO-conducted train-test-train programs for individual knowledge and skill enhancement for tank crewman. At the onset of the Persian Gulf crisis, the unit was requested to develop similar rapid train-up materials for RC use with Ml and MIAI tank crews.

Review of previous materials indicated that the most efficient package would include: training modules for individualized test-train-test of those tasks performed during combat, small graphic training aids which could also be used as job aids when performing pre-post combat tasks, procedural checklists which could also serve as job aids for pre-and post-combat tasks, and self study guides presenting basic knowledge on combat gunnery. Available materials in each of these categories were then obtained and modified for use with Ml and MIAI tanks. All materials were organized by skill level and subject matter, to parallel the organization of the 19K soldier's manual with manual references, and a cross-index of materials by task. A strategy for using the package, and recommended techniques for using each of the different components were then developed. ARI provided $345,000 in contractor support and 2000 in-house staff hours to develop the packages.

The completed Rapid Train-Up packages were submitted to the U.S. Army Armor School and the Training and Doctrine Command for publication and distribution.

INDIVIDUAL READY RESERVE (IRR) CALL-UP: ATTITUDES, MOTIVATION, AND CONCERNS

The U.S. Army Research Institute was tasked by the Office of the Deputy Chief of Staff for Personnel (DA-DMPM) to assess skill decay of the IRR call-ups for the Persian Gulf war. Associated with this tasking was another requirement by the Director of Military Personnel Management (DMPM): to identify problems that occurred during the call-up process, and to assess the impact of the call-up on the IRR.

A 31-item, multiple-choice questionnaire was developed which contained items to determine attitudes toward the call-up and identify areas of concern relating to the call-up. In addition, three existing data bases were used to provide data on several background variables. Responses to the questionnaire were received from 3051 IRR soldiers at seven locations. Over half of the respondents provided one or more written comments concerning their attitudes and concerns.

The majority of IRR call-ups had a negative attitude toward being "called up." In addition, they were dissatisfied with the way In-Processing was conducted. They complained about disorganization, long lines, lack of information, improper treatment, inappropriate training, incorrect or missing records and files, and finance problems. Other concerns were related to the disruption of their lives and its impact on their jobs, income, schooling, and families.

ARI contributed four person-months to this task, and our Research Report 1594, documenting this research was published in June 1991. This report, and briefings on the findings and recommendations, have been provided to the DMPM and the DCSPER, and are currently being provided to other relevant groups in the Army. It is expected that the findings will provide input for the development of manpower policies and plans for future mobilizations.

SINGLE CHANNEL GROUND TO AIR RADIO SYSTEM (SINCGARS)

The ARI Fort Gordon Field Unit was requested by the Commanding General of the Signal Corps to provide input on the production of a paper-based job aid to support Single Channel Ground to Air Radio System (SINCGARS) operation. The request was made because Desert Storm troops were having difficulty operating the radio, and because the Commanding General was impressed by a job aid developed by ARI Fort Gordon that supports Mobile Subscriber Radio-telephone Terminal (MSRT) Operations.

MAJ Smith, Dr. Legree, Dr. Gillis, and Ms. Plummer consulted with Signal corps personnel to help ensure the content validity of the job aid and to collect pilot data. Minor modifications were implemented to the SINCGARS job aid, and this data supported the decision to field the job aid. The Field Unit's investment in the project was minimal, but drew heavily on the experiences encountered through the production and validation of the MSRT job aid.
The Signal Corps subsequently published and distributed the SINCGARS job aid to Desert Storm troops.

ARI ODS SUMMARY REPORT

Class A aviation accidents which involved NVG operation occurring in the early stages of Operation Desert Shield resulted in the imposition of a 500 ft altitude floor for all flight operations. The US Army Safety Center requested ARI support in order to rapidly develop new guidelines for minimum altitudes and maximum airspeeds for NVG flight operations specific to South West Asian desert environments, in cooperation with USASC, USAAVNC, and C2NVEO,

ARIARDA provided expertise in NVG training, experimental design, and analysis. A field team assembled from the four agencies, with the ARIARDA representative acting as Technical Manager, pretested procedures and instrumentation at Ft. Belvoir, then deployed to Saudi Arabia where in-flight observations were made simultaneously with video taped NVG imagery. These were correlated and analyzed for stress, workload, and air crew confidence in order to produce estimates of limits to be observed. Observations were made with light levels from zero through 90% moon illumination in three terrain types: scrub, dry lake bed, and sand dunes. In addition, several concurrent subtests established recommendations for: crew coordination and visual scanning techniques, external aircraft lighting, IR searchlight use, and a demonstration of the Terrain Perception Enhancement Kit.

Graphic planning guides for airspeed and altitude, and recommendations for coordination/ scanning, IR light use, and aircraft lighting were produced in Saudi Arabia, along with a brief training video. These were distributed immediately, after briefing the chain of command. The recommendations were accepted, and the altitude restriction was removed approximately one month before the first Army Aviation involvement in Operation Desert Storm. The compiled results have been published as Aviation NVG Desert Training and Operations Planning Guide (Appendix E to TC 1-204). Costs to ARIARDA were limited to approximately 480 person-hours and approximately $2400 in travel. The results have been incorporated into the Lesson Plan and Student Handouts for NVG Operations training at USAAVNC.

Feedback from air crews and commanders returning from ODS indicate that the materials provided were well received and useful both in training Aviators before fighting began, and in planning mission during the conflict.

LESSONS LEARNED

CALL, CAC-T was tasked with collecting lessons learned on the mobilization of the Reserve Forces as part of DESERT SHIELD. They, in turn, requested that ARI's Field Unit at the Presidio of Monterey (POM) provide Technical Advisory Services to the CALL Task Force in the development of content, instruments and methodology.

ARI-POM personnel and a representative from ARI's Boise element met at CAC-T to develop a plan to assist CAC-T. An approach was agreed upon which included assigning areas of responsibility. ARI assumed the responsibility for providing data items, instruments, and methodology to obtain information on Combat Service Support Reserve Components and for providing draft materials to CAC-T for review and approval, In addition, ARI agreed to review all instruments, and to provide draft formats to CAC-T for their approval. Prior research done by ARI-POM/CAC-T in conjunction with the Logistic Center, plus the Determinants Research provided the basis for the development of draft materials. The ARI staff also used materials provided by CAC-T developed data collection forms, and evaluation plan summary sheets for Combat Service Support. ARI's total costs were approximately $1,500 for travel and 15 Professional Personnel-Days.

Evaluation Summary sheets were developed for the areas of logistics and administration (Family Services, chaplains, intelligence/security, non-deployable Personnel, morale support activities, personnel qualification, unit roster, records, unit strength and Personnel accountability, personnel processing mobilization cross-leveling system, finance, mobilization unit safety requirements, alcohol and drug abuse, medica preparation for overseas movement (POM), logistic data files, alert, mobilization at Home Station, mobilization station, and NTC training of RC CSS units.) These materials were subsequently incorporated by CALL in their data collection of mobilization of RC CSS units.

ARI-POM DESERT SHIELD/STORM SUMMARY REPORT

CALL, CAC-T, TRADOC requested summary information to provide to National Guard combat units on how they might best train to prepare for NTC.

A summary of findings based upon "Determinants" research was developed and submitted to CAC-T as per their request. It consisted of a compilation or summary of actions that could be taken by NG units to prepare for NTC consisted of eleven edicts (Bee attachment). The total "cost" to ARI was two personnel days.

The information provided went to both CAC-T and to DCST, TRADOC. We were informed that it was incorporated into a package of information that was provided to the NG.

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Tab Ten

Manpower and Personnel Research Laboratory Programs

1991 POST-OPERATION DESERT SHIELD/STORM SURVEY OF ARMY FAMILIES

The Army conducted its first worldwide survey of the spouses of active duty soldiers in the summer of 1987,a survey sponsored by CFSC and conducted by the Army Personnel Survey Division of USAPIC. The results were used by Army leaders to assess the status of efforts taken to improve the quality of life for families. Many of the efforts assessed had been identified by the annual Army Family Action Plan.

In the wake of Operation Desert Shield/Storm, the U.S. Army Community and Family Support Center (CFSC) and the U.S. Army Personnel Integration Command (USAPIC) conducted a survey of the spouses of active duty soldiers (during the fall of 1991) which examined the impacts of the operation on family members, and identified family member reactions to the planned smaller force for the 1990s. CFSC sponsored and provided funding for the survey. The Army Personnel Survey Division was responsible for developing the questionnaire, conducting the survey, analyzing the data, and preparing brief reports on the findings.

Some of the questions included in the survey were selected from the 1987 survey. In addition, managers of programs and activities for family members, and Army agencies conducting studies of family members were asked to submit requests for questions.

The survey addressed topics such as family programs and services, the Army way of life, soldier retention and readiness, medical and dental care, child care, education, recreation, employment status, relocation, housing and transportation, morale, welfare and recreation activities, reunion issues after Operation Desert Shield/Storm, and issues related to reducing the size of the Army.

The sample was stratified by rank of the soldier spouses, with oversampling conducted to increase subsample sizes for selected strata, and was drawn according to the final digits of the social security numbers of active duty members. Approximately 5,500 spouses of officers and 5,500 spouses of enlisted personnel were selected for the survey.

Survey materials were mailed to the spouses of the soldiers in September-October 1991. Prenotification letters and reminder postcards were used to increase the response rates.

Results and findings of the survey will be made available through CFSC, which will incorporate the findings of the survey into its community and family support studies program. This program includes the family well-being studies conducted in response to Operation Desert Shield/Storm, and these studies are part of the human factors study agenda established by the Army Deputy Chief of Staff for Personnel. The findings, including comparisons with the results of the 1987 Survey of Army Families, will be of use to Army agencies and commands for developing plans, assessing policies, and evaluating program operations and outcomes.

1991 Surveys of Total Army Military Personnel (STAMP)

STAMP is a program to provide information to assist personnel officials in setting policies and procedures during the current sequence of demobilization/redeployments and in the downsizing to follow. At the direction of CSA, the DCSPER tasked ARI to conduct several surveys of military personnel in the Active and Reserve Components of the Army. Three surveys were developed to respond to this tasking.The Initial Survey of Mobilized Reserve Component Personnel has been completed, a 2-Page Operation Desert Shield/Storm Supplement to the Army Career Transition Survey is currently in progress, as is the Main STAMP Survey of Active and Reserve Component Personnel - Due in Field this month.

The initial STAMP and the Main Survey efforts were developed in coordination with, and after consultation with: the Offices of the Assistant Secretary of the Army for Manpower and Reserve Affairs (ASA/M&RA), the Chief of Staff--Assessment & Initiatives Group (OCSA/CAIG), the Chief of the Army Reserve (OCAR), and the Director of the Army National Guard (NGB), the Inspector General and the Surgeon General, and after consultation with HQ USAREUR, US Army Forces Command (FORSCOM), US Army Recruiting Command (USAREC), the National Committee for the Support of the Guard and Reserve, the US Total Army Personnel Command (PERSCOM), Community and Family Services Command (CFSC), Army Career and Alumni Program (ACAP), Walter Reed Army Institute of Research (WRAIR), US Army Personnel Integration Command (USAPIC), Academy of Health Sciences, Center for Army Leadership (CAL), and Chaplaincy Services Support Agency.

The Initial Survey was a 6-page survey developed, produced, and distributed using ARI's in-house survey capabilities. It was sent to ??? mobilized USAR and ARNG personnel at the end of March, one month after tasking. This Initial Survey focused on providing immediate information on such potential influences on retention as: mobilization experiences, family factors, personnel utilization, unit cohesion and morale, demobilization experiences, expectations about reentry into civilian life, and perceived training adequacy and utilization. ARI received 618 completed surveys by the cut-off date of 5 July 1991. A substantial percentage (59%) of the soldiers responding to the survey sent in written comments ranging from one line to several hand-or-typewritten pages.

Findings from the Initial Survey have been briefed to the DCSPER, DMPM, HRD, and the Action Officers for the USAR and ARNG. These results indicate that Reserve soldiers were proud of the operation and generally satisfied with their Army experience.
Moreover, soldiers deployed to Southwest Asia were more likely to stay past their enlistment, and were more positive about recommending enlistment in the Reserves to others.

Most thought that the deployment went well, but:

" Information was often inaccurate or non-existent."

" Reserve soldiers were poorly treated by the Active Component soldiers."

" Leadership was inexperienced and unconcerned about their troops."

" Mail service was inadequate and personnel records were unavailable, particularly after deployment."

" Operations like Operation Desert Shield/Desert Storm were very likely in the next 10 years."

They believed that the problems and concerns they were expressing would impact readiness, retention, and morale. Implications from this small sample of Reserve soldiers suggest that Army policy makers may need to review and improve the following areas to ensure that the Total Army Concept" works in the future:

1) Information accuracy and its timely dissemination at all stages of mobilization and deployment.

2) Treatment of the Reserve Component soldiers by Active Component soldiers.

3) Leadership training and experience for both Active duty and Reserve soldiers.

4) Pre-planning and staffing at mobilization and deployment sites in order to reduce confusion, and to utilize personnel in meaningful jobs.

Fall 1991 Sample Survey of Military Personnel (SSMP)

The Army Personnel Survey Office (APSO), U.S. Army Research Institute for the Behavioral and Social Sciences (ARI), conducts the Sample Survey of Military Personnel (SSMP) twice a year, in the spring and fall. The SSMP is an omnibus survey designed to address in one questionnaire as many as 10-20 issues important to the Army, soldiers, and their family members. Army-wide samples of officers and enlisted personnel are selected using the final digits of soldiers' social security numbers (5 for the -1 1991 SSMP.)

Department of the Army agencies, field operating agencies, major commands, and other activities may submit items for inclusion in the SSMP. Requests for items in the SSMP are reviewed, questions are constructed and pretested, and a final set of questions is submitted to the DCSPER Military Survey Review Panel for selection/ approval. A standard set of demographic items is included in each SSMP to facilitate in-depth analysis and to track changes in Army personnel characteristics.

The Fall 1991 SSMP addressed selected key issues of concern related to Operation Desert Shield/Storm, including readiness, retention, preparations for deployment, morale, leadership, Family Support Groups, family issues/concerns, personal welfare, and Army support for family programs. Other topics addressed by this survey included Family Care Plans, bachelor quarters, meals and rations, Army Finance Office, safeguarding classified information, leisure time activities, Army Continuing Education System, Soldiers and Army Trainer magazine, installation newspapers, safety practices and attitudes, MANPRINT, and tobacco use.

Comparisons of results from the Fall 1991 SSMP with results from selected surveys conducted before Operation Desert Shield/Storm (Fall 1990 SSMP and Spring 1991 SSMP) will be made. These surveys addressed several key issues related to Operation Desert Shield/Storm, including readiness, retention, effectiveness of training, leadership, family issues/concerns, personal welfare, chaplain ministries, Armed Forces Network (AFN), and the command information program.

The Fall 1990 SSMP was totally rewritten in September 1990 to assess the impacts of Operation Desert Shield on soldiers and their family members. Because of the need to develop the questionnaire quickly, survey questions were selected by the Army Research Institute (ARI), Walter Reed Army Institute of Research (WRAIR), and the U.S. Army Personnel Integration Command (USAPIC). The questionnaires were completed in late November (before the commencement of Operation Desert Storm) and early December, 1990. Usable returns received from 2,320 officers and 5,026 enlisted personnel. Most of the respondents included in the preliminary data base were stationed in CONUS, and a few responses were received from Korea, Japan, and Panama; but the survey was not conducted in Southwest Asia and USAREUR.

The SSMP for Spring 1991 continued to address several key issues of concern related to Operation Desert Shield/Storm, including readiness, retention, effectiveness of training, leadership, family issues/concerns, personal welfare, chaplain ministries, Armed Forces Network (AFN), and the command information program. The questionnaires were completed in June, July and August 1991.

None of the three SSMPs--Fall 1990, Spring 1991 and Fall 1991--were sent to Southwest Asia for completion, and the Fall 1990 SSMP was not administered in USAREUR. The Spring 1991

and Fall 1991 SSMP were mailed directly to soldiers in USAREUR. Distribution of all three SSMPs elsewhere outside of and within CONUS were made through the Personnel Service Centers. Operational control of the Army Personnel Survey Office (APSO) was transferred to ARI in August 1991. APSO is now located in ARI's Manpower and Personnel Research Laboratory, under the direction of Dr. Zita Simutis.